An
Analysis of
The
OPPORTUNITY COSTS
&
MONETARY BENEFITS
of
Teacher Education
(1986)

DISSERTATION SUBMITTED TO THE MEERUT UNIVERSITY
IN PART-FULFILMENT OF THE REQUIREMENTS FOR
THE DEGREE OF MASTER OF EDUCATION

Candidate :
Km. DEEPA GOEL
R. No. : F-552004 E. No. M-7910643

Supervisor :
Mrs. S. K. DAS GUPTA
LECTURER IN EDUC. ADMN.

FACULTY OF EDUCATION, MEERUT COLLEGE, MEERUT

DECLARATION

I hereby solemnly declare that the annexed dissertation titled as "**AN ANALYSIS OF THE OPPORTUNITY COSTS AND MONETARY BENEFITS OF TEACHER EDUCATION**' is based upon my own research work and it has not been submitted any where for any purpose by me.

DATED : 30th. Sept. 1986

MEERUT

Deepa Goel

(DEEPA GOEL)
CANDIDATE

CERTIFICATE

Certified that **KM. DEEPA GOEL** is a regular student of M.Ed. class during the academic year 1985-86 and that the annexed dissertation analysis entitled **"AN ANALYSIS OF THE OPPORTUNITY COSTS AND MONETARY BENEFITS OF TEACHER EDUCATION"** is her original work and has not been submitted any where previously. The work has been done and completed under my guidence.

DATED : 30th Sept. 1986

MEERUT

FACULTY OF EDUCATION
MEERUT COLLEGE,
MEERUT.

(MRS. S.K.DAS GUPTA)
SUPERVISOR

ACKNOWLEDGEMENT

I am grateful to my mentor **Mrs. S.K. Das Gupta**, Lecturer, Department of Education, Meerut College, Meerut, whose kind guidence helped me in up-bringing this work.

I am deeply thankful to **Dr. S.K. Das Gupta**, Head of the Department of Education, Meerut College, Meerut with out whose generous and unfailing interest this work would not have been possible at all.

(KM. DEEPA GOEL)
CANDIDATE

CONTENTS

CHAPTER	TITLE	PAGE
I	INTRODUCTION	1 - 12
II	SURVEY OF RELATED STUDIES	13 - 21
III	CONCEPTUAL CONTEXT	22 - 34
IV	FIELD STUDY	35 - 76
V	CONCLUSIONS AND GENERALIZATIONS	77 - 82

APPENDIX	TITLE
I	Scores, squares and multiples of elementary male urban sample.
II	Scores, squares and multiples of elementary male rural sample.
III	Scores, squares and multiples of elementary female urban sample.
IV	Scores, squares and multiples of elementary female rural sample.
V	Scores, squares and multiples of secondary male urban sample.
VI	Scores, squares and multiples of secondary male rural sample.
VII	Scores, squares and multiples of secondary female urban sample.
VIII	Scores, squares and multiples of secondary female rural sample.

BIBLIOGRAPHY

TABLES	TITLE	PAGE
1.	Sample of respondents to whom questionnaire of opportunity cost (O.C.) was administered.	36
2.	Sample of respondents who returned the questionnaire on Opportunity Cost.	37
3.	Sample of respondents to whom questionnaire on Monetary Benefits (M.B.) was administered.	38
4.	Sample of respondents who returned the questionnaire on Monetary Benefits.	39
5.	Composition of sample of respondents whose scores were chosen in this investigation.	40
6.	Mean Values and Standard Deviations for Opportunity Cost of Teacher Education.	45
7.	Mean Values and Standard Deviations for Monetary Benefits of Teacher Education.	48
8.	Significance of Correlations between Opportunity Costs and Monetary Benefits of Teacher Education.	51
9.	Significance of difference between Mean Values for Opportunity Cost of Teacher Education.	55
10.	Significance of difference between Mean Values for Monetary Benefits of Teacher Education.	56
11.	Significance of difference between Standard Deviations for Opportunity Costs.	57
12.	Significance of difference between Standard Deviations for Monetary Benefits.	58
13.	Significance of Difference of 'R'.	59
14.	Intercorrelations among Different Variables in Opportunity Costs.	61
15.	'β' values and 'R' of different variables after dropping the Elementary Male Urban in Opportunity Costs.	62
16.	'β' Values and 'R' of different Variables after dropping the Elementary Male Rural in Opportunity Costs.	62

TABLES	TITLE	PAGE
17.	'β' Values and 'R' of different Variables after dropping the Elementary Female Urban in Opportunity Costs.	63
18.	'β' Values and 'R' of different variables after dropping the Elementary Female Rural in Opportunity Costs.	63
19.	'β' Values and 'R' of different variables after dropping the Secondary Male Urban in Opportunity Costs.	64
20.	'β' Values and 'R' of different variables after dropping the Secondary Male Rural in Opportunity Costs.	64
21.	'β' Values and 'R' of different variables after dropping the Secondary Female Urban in Opportunity Costs.	65
22.	'β' Values and 'R' of different variables after dropping the Secondary Female Rural in Opportunity Costs.	65
23.	Intercorrelations among Different Variables in Monetary Benefits.	66
24.	'β' Values and 'R' of different variables after dropping the Elementary Male Urban in Monetary Benefits.	67
25.	'β' Values and 'R' of different variables after dropping the Elementary Male Rural in Monetary Benefits.	67
26.	'β' Values and 'R' of different variables after dropping the Elementary Female Urban in Monetary Benefits.	68
27.	'β' Values and 'R' of different variables after dropping the Elementary Female Rural in Monetary Benefits.	68
28.	'β' Values and 'R' of different variables after dropping the Secondary Male Urban in Monetary Benefits.	69

TABLES	TITLE	PAGE
29.	'β' Values and 'R' of different variables after dropping the Secondary Male Rural in Monetary Benefits.	69
30.	'β' Values and 'R' of different variables after dropping the Secondary Female Urban in Monetary Benefits.	70
31.	'β' Values and 'R' of different variables after dropping the Secondary Female Rural in Monetary Benefits.	70

DIAGRAM	TITLE	PAGE
1.	Showing the sample of respondents to whom the Questionnaire on Opportunity Costs was administered.	36
2.	Showing the sample of respondents who returned the Questionnaire on Opportunity Costs.	37
3.	Showing the sample of respondents to whom the Questionnaire on Monetary Benefits was administered.	38
4.	Showing the sample of respondents who returned the Questionnaire on Monetary Benefits.	39
5.	Showing the composition of sample of respondents whose scores were chosen in this investigation.	40
6.	Showing Frequency Polygon Superimposed on Histogram of the Whole Sample of Opportunity Costs.	42
7.	Showing Frequency Polygon Superimposed on Histogram of the Whole Sample of Monetary Benefits.	42
8.	Showing Frequency Polygon of the Male & Female Sample of Opportunity Costs.	43
9.	Showing Frequency Polygon of the Male & Female Sample of Monetary Benefits.	43
10.	Showing Mean Values for Opportunity Costs of Teacher Education.	46
11.	Showing the Standard Deviations of Opportunity Costs of Teacher Education.	47
12.	Showing the Mean Values of Monetary Benefits of Teacher Education.	49
13.	Showing the Standard Deviations for Monetary benefits of Teacher Education.	50
14.	Showing Coefficients of Correlations Between Opportunity Costs and Monetary Benefits.	52

CHAPTER - I

INTRODUCTION

(1) THE PROBLEM

(a) Origin of the problem.

(b) Selection of the problem.

(c) Formulation and statement of the problem.

(d) Definition and delimitation of the problem.

(2) THE HYPOTHESES

(a) Major assumptions.

(b) Minor assumptions.

(3) THE GOALS

(4) THE RESEARCH DESIGN

(a) Methodology

(b) Techniques applied

(c) Tools used

(5) REFERENCES

CHAPTER- I

INTRODUCTION

THE PROBLEM

(a) Origin of the problem

Planning is a dynamic process. It is ever growing and everchanging. It begins with the promise of certain conditions and culminates with the achievement of the designed objectives. Thus each plan is a step forward towards the development of the country. Educational planning is a complex venture. As a cohesive force it directs and coordinates the different components of the educational system towards the pre-determined objectives. Since educational plan is an integral part of the comprehensive social and economic plan, it also seeks to establish equilibrium with the peripheral components.

The concept of planning originated in the USSR. Lenin was apprehensive of the difficulties but he said, "It is the most difficult task, because it is a matter of organising in a new way the most deep rooted of the economic foundations of life of scores of million of people. And it is the most grateful task."

History of education in India basically followed a course similar to that in other countries. The ruling and the priestly class monopolised education till the end of the medieval period. An indigenous system of education was in existence when the British took over political power in

1757. The educated class alienated itself from the people and lived in a world of its own and always looked towards the rulers as their ideals. Committees and commissions appointed from time to time expressed concern over the state of primary education but practice continued to be the same, more or less till education, with certain reservations and limitations, became a provincial subject in 1935. Mr. Visvaraya, father of Indian planning, said, "the elementary needs in nation building are education, industries and defence and these have suffered most under Dependency rule. Education occupied a key place in his scheme of planned economy.

The Indian National Congress, under the leadership of Jawaharlal Nehru, constituted the National Planning Committee in 1938. The committee launched a vigorous effort to prepare blue-prints for the development of various fields in national life. The NPC appointed two sub-committees on education, one on General Education chaired by Dr. S. Radha Krishnan and the other on Technical Education under Dr. Meghnad Saha. The Sub Committee on General Education prepared a broad and a tentative report which was considered by the NPC, but the report of the sub-committee on Technical Education and Development of Research could not even be considered.

The General Secretary of the Committee, however, brought out a volume on Education in 1948, containing a broad out line of whatever work had been done in planning

educational development. Because the plan for Post-War Educational Development in India was published by C.A.B.E. in 1944, the work of the NPC did not have any impect on educational planning in India. Its main significance is historical, it was the first organisation to think of preparing a plan of educational development as a part of an over all plan of socio-economic development.

With a view to reconstruct the economy of the country, the Government of India formed a Reconstruction Committee, in 1941, An advisory board was also attached to this department. A Planning and Development Department was constituted in 1944, under a Member of the Executive Council, to organise and co-ordinate planning in the country. The planning and Development Department prepared certain guide-lines and sent them to the provices and Indian States for preparation of development plans of their area. For Central plans sector-wise panels were appointed. Educational plan was entrusted to the CABE who under the leadership of Sargent was already on the way to it.

CABE had already constituted committees on basic education, adult education, physical welfare of school children, school building, training and working conditions of teachers and technical education. The studies were properly welded and a comprehensive plan of educational development was presented to the CABE in 1944. The report bears the title, "Post war Educational Development in India, "but popularly it is known as Sargent Plan.

The Sargent Plan is in fact the first comprehensive educational plan of India. While this reflects credit on Sir John Sargent and his colleagues, it is unfortunate that, even after a lapse of forty years, it is still the only document available on the subject. The Sargent plan naturally attracted considerable attention through out the country. The plan worked out a complete educational structure from preprimary to university level. A scheme of educational reconstruction without prior preparation of competent teachers is a fruitless exercise. The report stressed this need for teacher preparation and prepared a scheme with minimum two years' professional education, after matriculation, for elementary schools.

For university level, selective admissions on merit basis, were suggested with liberal financial assistance to telented but poor students. For illiteracy eradication a twenty-five year scheme was also suggested. The plan extending over a period of 40 years was divided in five yearly stages. The Sargent plan, although an outstanding and comprehensive educational plan suffered from defects as well. The first major flaw was that it did not take into account the increase rate of the population. It assumed a constant rate of growth which could not present a correct idea of magnitude of the task. Secondly, the plan was not integrated with other economic and social sectors and it conviniently ignored the role of the deeply embedded economic and social institutions as important determinants of education.

How-ever, there was much hue and cry over the plan. A plan prepared by the Britisher was not acceptable to the Indians. Over and above this unpalatable fact, or presumption, the 40 year period, for compulsory enrolment of 6-14 age group children was too long a period. And the Kher Committee, appointed by the CABE, reduced the period to 16 years, but the cyclone of political events captivated the scene and the plan was deferred for more apportune time.

Now a desire to 'revolutionise' the system has been the most professed goal of educational reconstruction in the post independence period. The best and incidentally the most advertised, achievement of education in the post independence period are the comprehensive approach-the trend to do something in every sector, how ever small-and expansion. As a consequence of this expension, the quality of education has been diluted to some extent. The denger of this dilution have now been recognised on all hands and there is universal agreement on the view that, in the next three plans, the emphasis will have to be shifted to qualitative improvement of education so that, by 1981, the country will have both a wide spread and a good system of education.

The supreme device for improving quality is to emphasise the human factor. Better education does need more investment and more physical resources, no doubt. But it needs the human efforts even more- the combined efforts of the officers of the Education Department, the teacher, the student and the parent.

It is obvious that India is now facing the worst ever challenge in its long recorded history of more than six thousand years. The appelling poverty of the masses, which has dogged the foot steps of the country for more than a hundred years, is now immansely accentuated by the population explosion. First national goal is to eliminate poverty and to raise the standards of living of the people. It is necessarily a long term project. Every project is characterized by an investment period in which only costs are made, and a production period during which returns are obtained, may be at the expense of further costs. Quality can be attended to only after a certain expension is attained. The emphasis on teachers and quality had a peculiar relevance in the Indian situation where standards were very low.

(b) Selection of the problem

The selection of a research problem for the master's thesis is a very important step for the graduate student. In looking for the research problem the investigator had borne in mind some of the possible out comes of her research effort. The review of the literature provides her with an understanding of the work that has already taken place relating to the problem area and prepare him to carry out a project that will add to the facts and information that have been accumulated by previous research workers.

The bibliographical canvas of available related studies determined the novelty of the present problem. The researcher

felt embolden to select her own research problem because she thought that the result should prove better in term of the quality of work done.

(c) Formulation and statement of the problem

First of all the researcher formulated the major problem than subdivided into specific working units. The present problem is a statistical analysis from the economic trick angle and relationship point of view of the opportunity cost of teacher education with monetary benefits of teacher education, both for the elementary and secondery teacher trainees belonging to both the sexes and also both urban and rural areas.

(d) Defining and delimiting the problem

In this existent research it can be precised that opportunity cost meant the estimates of the income or earnings students forego while attending school. It is foregone earnings that explain why so many able children from low-income families do not stay at school beyond the statutory age, despite the fact that the out of pocket costs of continuing school are minimal, particularly in Great Britain.

The monetary benefit means the rate of return to investment in education approach to educational planning is relevent to discuss whether the country is investing the right amount of resources in education. Quite apart from educations effects on one's ability to obtain a satisfying and productive job estimates of the direct monetary returns to education should be adjusted to take account of present and future pleasure.

Further, elementary teacher education means the teacher training imparted by the state possessed primary school to secondary school graduates, and secondary teacher education means the teacher education imparted through the State universities and affiliated colleges to university graduates.

This investigation is delimited in to Meerut University and the Meerut division only for determining the population.

(e) Justification for research

The real need in our country is to change our whole approach to the theory and practice of teacher education. Many reforms have been introduced in recent years in the educational system of our country, in keeping with the requirements of the new social and economic order which is emerging in the wake of political freedom. A stagnant educational system cannot sustain a dynamic economy. We must, therefore, continue to expand and improve our educational system to meet the growing needs of our economy.

Today Education is consider as an investment good. Like any other investment it is clearly important that investment in different level of education should be compared with appropriate rates of return. Training of persons in particular kinds of skills may result in important external benefits if there are bottlenecks to economic development. At the outset, it should be made clear that the measured rates of return are money rate of return. Human capital in recent years has been

viewed as important as, if not more than, physical capital. In the last few years developing countries have started making an increasing use of cost-benefit analysis, and an investigation needs no more of justification than the aforesaid.

THE HYPOTHESES

(a) Major Assumptions

(1) There exists a positive correlation between the opportunity cost of teacher education and the monetary benefit of teacher education.

(2) There is a relationship between the opportunity cost in bringing out monetary benefits and the gain in efficiency.

(3) Monetary benefit in teacher education achieved when certain conditions hold from each pair of products, pair of factors, and involving one factor and one product, if for each pair a single marginal rate of transformation or marginal rate of technical substitution holds throughout.

(b) Minor Assumptions

(1) The production functions bind (input output-space) the range of technically feasible sets of positive values for all factors and products.

(2) Correlation analysis helps to know the factors which effect the opportunity cost per student trained and regression analysis enables to see the effect of each factor (independent variable) separately.

THE GOALS

(1) To find the coefficients of correlation between the opportunity cost factor and the monetary benefits factor in teacher education.

(2) To find the measures of relationships between the opportunity cost of bringing out monetary benefits and the subsequent gain in internal efficiency.

(3) To find such conditions and their measures which enable achievement of monetary benefit in teacher education.

(4) To find the measures of production function which bound the input-output space.

(5) To find the factor which affects the opportunity cost per student range through correlation analysis and through regression analysis to see the effect of each independent variable separately.

THE RESEARCH DESIGN

(1) Methodology

The method adopted for this study in main can be called the normative survey, supplimented by statistical analytic methods.

(2) Techniques applied

Problems involved in costing area multifarious. But systematic-analysis and rational statistical techniques can help the investigator to achieve the plan objectives to illustrate the outcomes for an easy inference she also used the graphical techniques.

(3) Tools Used

For collection of data the tools were :-

A. Schedule for finding out the opportunity cost involved as per teacher trainee and the other.

B. Tools being a schedule meant to give the achievement measures of the teacher trainees in terms of monetary benefit.

REFERENCES

Barr, Davis Johnson : Educational Research and Appraisal.
J.B. Lippicott Co., Chicago, New York, 1953.

Best, John W. : Research in Education, Third Ed.
Prentice Hall of India P. Ltd. 1977.

Blaug M. : Economics of Education, Volume I,
Middle Sex Penguin Books Ltd, 1968.

Borg W.R. : Educational Research, the Scientific
Method in Education, New York, 1963.

Education, National Planning Committee : Vohra & Co.,
Publishers Ltd. Bombay, 1948 p. 139.

Lindquist, E.F. : Statistical Analysis in Educational
Research, Boston, Houghton Mifflin
Co., 1940.

Lenin as quoted by I.A. Yevenko, in Planning in the U. S.S.R.,
Foreign Language Publishing House,
Mascow, 1961, P. 7.

Naik J.P. : Educational Planning in India, Allied
Publishers, New Delhi. 1965 p.2.

Shah K.R. & Srikantian S. : Education Earning and Income
Distribution, A Research Report
Sponsored by the Indian Council of
social Sciences Research, New Delhi,
Criterion Publications, June, 1981.

Shri Prakash : Educational System of India, an econo-
matric. Study, Concept Publishing
Company Delhi, 1977.

Saxena Sateshwari : Educational Planning in India, A Study
in Approach and Methodology, Sterling
Publishers Pvt., Ltd, New Delhi 1979.

Travers, Robert M.W.: An introduction to Educational
Research, Second Edition, the Mac
Millan Company, New York, Collier-
Mac Millan Limited, Landon, 1958 &
1964.

Visvesvaraya, Sir M.: Planned Economy of India, Bangalore
Press, Bangalore, 1934, P. 203.

o o o

CHAPTER - II

SURVEY OF RELATED STUDIES

(a) Critical Review of Related Studies Abroad.

(b) Critical Review of Related Studies Inland.

REFERENCES

CHAPTER - II

SURVEY OF RELATED STUDIES

Critical review of related studies abroad

The importance of teacher's education as an investment approach is not unfamiliar to economists as early as in 1776 by Adam Smith[1]. But it took considerable time for them to realize its full implication and scope. Later in 1890 it was taken up again by Marshall[2] and the picture had already become much fuller. Further it had been taken up in 1906 by Irving Fisher[3]. It provides the implicit foundation of a study by Strumilin[4] (1924) carried out 60 years ago in the Soviet Union. More resently in 1960 Schultz[5] has made the approach fashionable amongst American economists. Merrit[6] (1965) found that there are two advantages to setting out the concept in terms of teaching factor, first it stresses the importance of the productive role of the student. Secondly by making the product, from a conceptual point of view, an element quite distinct from its possessor, our right is hightened in understanding both the richness and limitations of treating education as a capital farming process. These advantages can be illustrated by examining the subject of growth theory, students, opportunity costs, student finance, and the relation between the rates of return and manpower needs further studies of education.

The view of education as an investment in a creation of future income streams is a special view of education. As

Schultz[7] pointed out that the concept of foregone earnings as one of the costs of schooling, is a key to a number of puzzles about education. By adding together the opportunity cost of education and the expenditure for formal education of all types, he calculated a figure for the total annual investment in education in United States by decade from 1900 to 1956. Bridgman[8] (1960) also studied the life time gains of college education as compared to school education in the United States. Bowen[9] (1963) pointed out that education must be viewed as a series of related steps. Weisbord[10] (1962) has made this point quite clearly, and, to illustrate the order of magnitudes involved, has shown that recognising the value of the option to obtain additional education raises the expected rate of return on grade school education from a previous estimate of 35 per cent to 52 per cent. Becker[11] (1964) also included the income foregone by government because of loss in laxes. Makean argue that there is no opportunity cost of capital. Tumer has pointed out the limitations of this approach. Timbergen[12] (1962) suggested the use of shadow or accounting prices in evaluating investment projects. Phillips[13] (1961) included in opportunity costs the earning foregone by the teachers. Vaizey[14] (1969) also pointed out the limitation in the methods of calculating it.

Monetary benefits of teacher education is classified as internal and external benefits. R.C. Young[15] emphasises that education enable the student to yield higher monetary benefits

as well as non-monetary benefits. According to Vaizay[16] (1962) it has been aptly said that the rate of return on investment in training is very much higher than the rate of return on physical capital. Gary becker[17] analyzed rates of return to whites and to non whites seperately. Hansen[18] (1963) also studied the rate of return to investment propounded his methodological classic on estimation of internal rates of return. In M. Blaug[19] (1968) point of view any type of project is beneficial if it yield the return to the investment in terms of earning and quality. Like wise in teacher education industry also investments have prove their importance in terms of increasing earning and productivity.

Critical review of related studies inland

The integral relationship between education and economic development has received conceptual recognition since the times of the classical economists. Attempts of qualify this relationship have, however, been of recent origin. Researches in this area gathered momentum particularly after the publication of the Report of the Education Commission[20] (1964-66). The basic assumption in relating education to economic growth is the potentiality of education to contribute to the national economy. Expenditure on education is not merely of a consumption character. It contributes to human capital formation by increasing the human capabilities and skills. Thus expenditure on education is an investment which is no less important than the traditional factors of production.

As a branch of study, the economics of education had been taken up both in India and abroad. A comprehensive account of its growth is given in Buch[21] (1974). The earliest study in India in the present group was conducted in 1959. But this field has fast growth. As in the international context Blaug[22] (1966-A & B) records that there were only 108 studies upto 1956, where as during the next two five year periods the production of such literature was 200 and 500 respectively. In India also, the growth has been tremendous. Kothari and Panchamukhi[23] (1975) recorded a total of 280 items, which include published and unpublished seminar papers, articles, research reports, doctoral thesis, reports of committees and commissions etc. Pertaining to Indian education, while the beginning was only in the late 50's. Looking in to the overall importance and the fast growing character of this field of study, it seems essential to make periodical analysis of the trends of research and develop guide lines for planned research in the field.

The first such attempt was made by Mukherjee and Mukhopadhayay (1974) who classified the thirteen studies at doctoral and institutional levels in the three main categories, namely, financing, education and productivity and costs of education. Kothari and Panchamukhi (1975) discussed "the important works in economics of education by the Indian authors and by the foreign authors about Indian problem." Education and productivity in some sense may be examined in terms of

individual returns reckoned as life time earning. The research of educational returns at macro and micro levels are relatively few. Moreover, the returns need to be considered in individual as well as social context. Kothari and Panchamukhi (1975) reviwed 8 studies on this problem. First such efforts was by Harberger[24] (1966) who studied the age education earning structure of Indian high school leavers and university graduate. Nalla Gounden[25] (1965-67) asserted that only 50 percent of the income is due to education. Similar studies are by Blaug et al. (1969), Pandit[26] (1972) and Paul (1972) applied the cost benefit analysis on management education. *Mukherji and Rao*[27] *(1966) and Kothari*[28] *(1966) studied the* returns to education at different levels and for different subject specialization. The researches in this comparatively important area are scanty. The studies on rates of return have been largely limited to urban India. Depending upon the opportunity and social conditions, the rates of return are likely to differ in non urban area for even the similar investment and specialization.

The cost of education is an popular area of research in economics of education. Quite a few researchers have invested their efforts in measuring the cost of education. The cost of education is a composite measure comprising the social cost, institutional cost and private cost. The social cost would imply mainly the opportunity cost foregone by a student. The researchers, who have contributed to this area

of research are Kamat[29] (1968) Panchamukhi[30] (1965) Shukla (1960) Singh and Singh (1972). Besides, the commissions, committees on education have also calculated costs of education perhead. The first study by Shukla (1960) estimated the per capita cost of education in basic and non basic primary school in 1957-58. The rest of the three studies calculated the costs of higher education. Alka[31] also calculated opportunity cost of teacher education in Meerut Region. It is observed by her that it is a big component, which incur in lieu of the income foregone by the student by acquiring teacher education in place of a job. Anita[32] estimated the monetary benefit of teacher education. By her investigation she comes to the generalization that from the private point of view the parents or students are rational in under taking investment in additional education i.e. teacher training.

REFERENCES

1. Smith, Adam : "The Wealth of Nations", Book II, Chapter I, 1776.
2. Marshall, Alfred : "Principles of Economics", Sixth edition, 1910, (First edication 1890).
3. Fisher, Irving : "The Nature of Capital and Income, " New York, 1906.
4. Strumilin, S.G. : "The Economic Significance of the People's Education", Leningrad, 1924.
5. Schultz, T.W. : "Capital Formation by Education", Journal of Political Economy, December, 1960.
6. Merrett, Stephen : "Student Finance in Higher Education", July, 1965.
7. Schultz, T.W. : "The Economic Value of Education", Columbia University Press, New York, 1964.
8. Bridgman, D.S. : "Problem of Estimating the Monetary Value of College Education", in Higher Education in the United States : The Economic Problem, Ed. Harris, 1960.
9. Bowen, W.C. : "Assessing the Economic Contribution of Education : An Appraisal of Alternative Approaches", Robbins Report on Higher Education in the U.K. 1963.
10. Weisbrod, B.A. : "The Valuation of Human Capital", Journal of Political Economy," October, 1961.
11. Becker, G.S. : "Human Capital," New York, 1964.
12. Timbergen, Jan : "Quantitative Adoptation of Education to Accelerated Growth," 1962.
13. Phillips, H.M. : "Education as a Basic Factor in Economic and Social Development," (Contained in the Report of the conference of African States on Development of Education in Africa, Addis Ababa, 1961).
14. Vaizey, J. : "The rates of returns on investment in Education". Economics of Education, London, Pelican Orient Longmen's, 1969.

15. Young, R.C. : "Educational Planning and Economic Criteria in India's context, (Contained in "Education as Investment", edited by Baljit Singh, Meenakshi Prakashan, 1967).

16. Vaizey, J. : " The Economics ot Education", London,1962.

17. Becker, Gary : "Under investment in College Education? American Economic Review, May 1960.

18. Hansen, W.Lee. : " Total and Private Rates of Return to Investment in Schooling", Journal Political Economic Vol. I, 1963.

19. Blaug, M. : "The Economics of Education", Vol.I & II, Penguin Modern Economics. 1968.

20. Commission Education : "Education and National Development Report", 1966, N.C.E.R.T., New Delhi.

21. Buch, M.B.(Ed.): " Second Survey of Research in Education", 1972-78.

22. Blaug, Mark : "A Selected Annotated Bibliography in the Economics of Education, University of London, Institute of Education 1964, Subsequently revised as Economics of Education: A selected Annoted Bibliography" Pergamon Press, 1966, The New Version listed nearly 800 Items.

23. Kothari, V.N. and Panchamukhi, P. R. : "A Survey of Research in Economics of Education in India", I.C.S.R. New Delhi, 1975.

24. Harberger, Arnold : "Investment in man Vs. Investment in Machines: The case of India". University of Chicago, 1963.

25. Nalla Gounden : "Education and Economic Development- A Study in Human capital formation and its Role in Economic Development in India" 1950-51 to 1960-61, Ph.D.Edu.,Kur.Univ.1965.

26. Pandit, H.N. : "Cost Analysis of Education in India", N.C.E.R.T., New Delhi, 1972.

27. Rao, V.K.R.V. : "Education and Human Resource Development", 1966, Allied.

28. Kothari, V.N.(Ed.) : "Investment in Human Resources," Papers Read at Indian Economic Conference, 1966, Varanasi, Popular Prakashan.

29. Kamat, A. R. : "Two studies in Education," Gokhale Institute of Politics and Economics, Poona.

30. Panchamukhi, P.R. : "Measurement of effects of Public Expenditure with Special Reference to Public Education and Health Expenditure in India", Ph.D. Eco. Bom. Univ., 1967.

31. Agarwal, Alka : "An Analysis of the Opportunity Cost and Qualitative benefit of Teacher Education", Meerut, Unpublished Dissertation, 1984.

32. Kotpal, A. : "An Analysis of the Private Cost and Monetary benefit of Teacher Education," Meerut, Unpublished Dissertation, 1984.

CHAPTER - III

CONCEPTUAL CONTEXT

(a) General

(b) Opportunity Costs of Teacher Education

(c) Monetary Benefits of Teacher Education

REFERENCES

CHAPTER - III

CONCEPTUAL CONTEXT

(a) General

The progress and prosperity of our country undoubtedly depends upon a sound system of education and a good system of education cannot be achieved without dedicated toil, patient thought and fruitful cooperation among all the agencies involved in the task of educational reconstruction. The teacher is the pivot of the whole educational system. The primary duty of teachers is to teach and when there are such large percentage of failure they must recognize this as their own failure with firm determination we must root out the rot which has set in our educational system. Institutions for the training of teacher, function as the nerve centres for all our primary and secondry school. If education is to be the instrument of social change, teachers cannot remain content in an attitude of vacillation and uncertainty.

Education like any other enterprise has its economic side too. The inputs entail certain costs which are to be incurred and cost seek avenues from where the resources may be tapped. Since education is not treatedas an industry and the investment made in education is treated as consumption and not capital formation (human capital). This industry continues to remain sick and unable to make its expected contribution to national domestic productivity.

It is only investment in professional education that has paid dividends in terms of its contribution to the increase in national output. However the rate or investment in education in under developed countries is critically low. Therefore, it is important for every investment outlay to yield a high rate of return to justify the investment.

Rate of return to investment in education is compared with the rates of return to investment in other sectors of the economy. Education demands certain financial resources for investment in the system and the claim requires some justification. If resources are invested, the return should justify the investment.. Unlike other productive sectors establishing the input output relationship is more difficult in education. First, it is preparation of the human resources which by its very nature is very complex. Secondly both the society and the individual invest resources and both want their share in return.

Education is an industry requiring certain inputs of teachers, administrators, students, equipments and so on. Preparation of students is the output of the process.

The unemployment of the educated is one of the most serious problem which Indian planning is facing today. After some schooling young people are unable to find job, they keep extending their education.

The education's economic aspect is mainly concerned with the cost of education and returns from education.

(b) Opportunity costs of teacher education

Costs have been divided in to direct and indirect costs. Indirect cost have been taken as the earning foregone while receiving education during the working age period taken to begin at the age of 15 or after matriculation. Schultz (1) has estimated that opportunity costs were equal to about three fifths of the total costs of high school and college education in 1956 in United States.

W.G. Bowen (2) pointed out that it is essential that cognizance be taken of the opportunity costs (foregone output) involved in having students attend school rather than work. According to M.J. Bowman (3) all costs are opportunity costs. What some thing 'costs' is what must be given up to get it. In G.S. Becker's (4) point of view foregone earning are an important, although neglected, cost of much investment in human capital and should be treated in the same way as direct outlays. In essence, what Becker did was to carry Schultz's student foregone incomes the next step, to income a man may forego now in order to take a job in which he will learn more.

Walsh (5) did not discuss foregone earnings as a cost, his method in fact took them into account when he set up his earnings streams. Vaizey (6) thinks "the inclusion of income

foregone opens the gate to a flood of approximations which would take the concept of national income away from its origin as an estimation of the measurable flows of the economy, if income foregone is added to education costs it must be added to other sectors of the economy. Vaizey's objection to the inclusion of student opportunity costs in education costs seems to make as much sense as ignoring the labour costs of any branch of economic activity simply, because, for one reason or another, wages were not paid.

As regard the cost of education H.M. Phillips (7) would include in 'opportunity costs' not only the earning foregone by students but also by the teachers.

Costs of education are low in under developed countries as the opportunity costs of students and teachers are little and building are or can be put up by idle man power through use of local material. Real resources have not be withdrawn from other productive purpose to the same extent as in developed countries. The demographic composition in under developed countries makes the costs of mass education much higher. The resultant of these various factors has to be carefully worked out before the results obtained from advanced countries can be applied to developing countries. The method evolved in determining the return from education to developing countries cannot be easily used as the type of data required is not easily available.

Various writers have emphasized students foregone earning as a cost of education, they pay a good deal of attention to 'income foregoing during study' which constitutes a large proportion of the costs of investment. But only for secondary and higher educational level opportunity costs are considered equivalent to the earning of primary and middle school teachers respectively. Opportunity costs will also require some weightage and schemes like 'earning while you learn' may also be formulated. The total cost involved in providing education is not merely the cost incurred by the government or private bodies, but also the opportunity costs, i.e. the income which the student would have earned had they not joined the educational institutions.

India as a developing country, lacks the comprehensive costing data and no costing models have been prepared in the last so many years. To calculate opportunity cost of teacher education in India is problematic as compared to the affluent western countries.

Pandit (8) calculated opportunity costs on the basis of three fector. According to him the percentage of foregone income is about 51 per cent of the total costs. The high proportion of income foregone, opportunity costs, shows its relevance in planning. Costs are made up of the outlay on land, capital, teacher and the opportunity cost of the student time.

After Schultz the concept of opportunity cost has been further refined by Hanson (9). Using the data the average and marginal rates of return on resources costs before and after tax has been computed by Harson. Arhold Harberger (10) says that the foregone earning of college and university student in India are likely to be higher than the average earning of secondry school competetors because of difference in natural ability, if we could take this into account we would come out with still lower estimates of the economic rate of return to investment in education. For each educational level earning foregone would differ with each age group.

Narula (11) computed the opportunity cost and found that opportunity cost of teacher education in under developed countries like India is negligible. The concept of opportunity cost is important and the calculation of it, in teacher education is considered necessary for a knowledge of the internal efficiency of the system. Alka (12) inferred that the opportunity cost accounted for a major percentage of the total cost. By analysing the fact she concluded that any increase in opportunity cost affects the achievement of benefits in the positive direction.

(c) Monetary benefits of teacher education

The role of the Government in education has been recognized from the earliest times. Timbergen (13) thinks

that in addition to the Government's financial policy, its monetary policy is also important. If the national income rises, the amount of money is also permitted to increase and a part of a national expenditure can be financed by the creation of credit. It is held that education yields a high rate of return on investment i.e. the monetary returns exceed the cost of education by a considerable margin. This is true both for the society as a whole and for the individual who invests in himself for his education. The rate-of-return approach has many attractions, not the least of which is that educational benefits are related to educational costs in a way that holds out the hope of providing useful information concerning the adequacy of the overall level of investment in education and the extent to which economic benefits accrue directly to private individuals.

Unfortunately, measurement of the return to education is not an easy task. In order to calculate the returns, we need to know the cost as well as the yield of education. The estimation of yield is more complicated. This is because the returns to education may be monetary as well as non monetary, private as well as social. For instance, a person with more education may be earning a higher income. That is the monetary aspect of the private return. An attempt is made here to estimate the social and private monetary rates of returns to education on the assumption that by and large the benefits of education accrue to the

individuals concerned and that the monetary benefits of education are almost wholly reflected in the increased private earnings. These increased private earnings are compared with the social costs of education (Fees + Public Expenditure + Earning forgone) to obtain the social and private monetary returns to education respectively.

According to H.G. Shaffer (14) investment in man is essentially different from the investment in non human capital. The difference arises largely from the fact that, as a general rule, at least a part of any one direct expedntiture for the improvement of man is not investment as the term is usually used, i.e., it is undertaken for reasons other than the expectation of a monetary return, it has not traceable effects on future output and it satisfies wants directly. The fragmentary treatment of both the costs of schooling and the money returns to schooling found in much of the recent literature provided the stimulus for preparing these internal rate of return estimates. For example Miller (15) calculates lifetime income values by level of schooling and Houthakker (16) estimates, on the basis of alternative discount rates, the present value of income streams associated with different levels of schooling. To calculate a national rate of return figure, Schaltz (17) has argued that the way to proceed is by first identifying the consumption component of educational costs, and then subtracting this amount from total educational costs in order to arrive at the base level of costs which can

properly be used to calculate the rate of return on the investment portion of educational expenditure. For example Becker's 9 percent rate of return would be raised to 18 percent.

Becker's (18) interesting finding is that where as the rate of return on the cost of college education was 9 percent for urban white male in the United States as of 1950, the comparable rate of return for non whites was about two percent lower than this. Becker and Schultz (19) calculate for several levels of education the expected rates of return, sometimes on a total resource cost basis and at other times on a private resource cost basis.

W.G. Bowen pointed out that rates on education, from what we have called 'national productivity' standpoint, are concerned solely with the effects of education on the nation's GNP, the output of the country. This orientation is relevant to the question of whether society as a whole is investing the right share of its resources in education.

Since the monetary benefits of education accrue over time, it is necessary to use some discount factor to take account of the fact that a dollar earned tomorrow is less valuable than a dollar earned today, and computation of the present value of the future stream of benefits to be expected from education are very sensitive to the discount factor used. At the out set, it should be made clear that the measured rates of returns are money rates of return.

In W.C. Cash's (20) point of view it is important for every investment outlay to yield a high rate of return. The government should invest wherever the yield is highest, whether in education, in other social over head capital etc. Education should be expended only if the yield justifies the investment. Dension (21) has remarked, even if the yield of education were less than the yield of business capital, it is possible that the diversion of resources from private industry to education would raise national income and contribute to economic growth.

In practice, it is virtually impossible to calculate the rate of financial return on an educational project because of the difficulty of ascertaining how much is really consumption and how much represent investment. Among financial assets we are presently concerned with only the monetary assets. It will have to play a major role in the promotion as well as mobilization of saving. In addition, their growth will be the main vehicle of financial progress in the country.

The studies made by Kothari and Punchamukhi (22) can be regarded as starting point on rate of return approach in India and can be further refined. According

to Kothari the private monetary returns to college education came to 14 percent as against social returns of 13 percent. He has calculated the social rates of return on investment in education. V.K.R.V. Rao (23) comments that since education is not treated as an industry and the investment made in education is treated as consumption and not capital formation (Human Capital), this industry continues to remain sick and unable to make its expected contribution to national domestic productivity. It is only investment in professional education that has paid dividends in terms of its contribution to the increase in national output. Education is related to productivity. An expension of education leads to an increase in national income which, in turn, may provide the means for a larger investment in education and productivity can thus constitute a 'rising spiral' whose different parts sustain and support one another. In Meerut region also Kotpal (24) computed the monetary benefits of teacher education and found that there are a very high positive correlation evidence between costs and monetary beneifts. In other words that costs and benefits are associated in a positive manner with each other.

REFERENCES

1. Schultz, T.W. : Capital Formation by Education, Journal of Political Economy, December, 1960.

2. Bowen, W.G. : Assessing the Economic Contribution of Education : an appraisal of alternative approaches in higher education, Report of the Committee under the Chairmanship of Lord Robbins 1961-63 London H.M.S.O. 1963, Appendix IV.

3. Bowman, M.J. : Costing of human Resource Development and comment on that paper in the proceeding of the 1963 conference of the International Economic Association, On the economics of Education London, Mac Millan 1966.

4. Becker, G.S. : Human capital. A Theoretical and Empirical Analysis, with special reference to Education Columbia University Press, 1964.

5. Walsh, J.R. : Capital Concept applied to man, Quarterly Journal of Economics, February 1935.

6. Vaizey, John : Economics of Education, London, Faber and Faber, 1962.

7. Phillips, H.M. : Education as a Basic Factor in Economic and Social Development, in the Final Report of the Conference of African States on Development of Education in Africa, Addis Ababa - 15-30 May 1961.

8. Pandit, H.N. : Cost Analysis of Education in India, N.C.E.R.T., New Delhi, 1972.

9. Hanson : The Total and Private Rates of Return to Investment in Schooling, Journal Pol. Economic Vol. I, 1963.

10. Harberger, Arnold: Investment in Man Versus Investment in Machines : The case of India _ A study prepared for the Conference on Education and Economic Development, Univ. of Chicago, 1963.

11. Narula, K.K. : A opportunity cost of teacher education, Meerut, Unpublished Dissertation, 1980.

12. Agrawal, A. : An Analysis of the Opportunity Costs and Qualitative Benefits of Teacher Education. Meerut, Unpublished Dissertation, 1984.

13. Tinbergen, Jan : Development Planning, Translated from the Dutch by N.D. Smith, World University Library Weidenfield and Nicolson Limited, 1967).

14. Shaffer, H.G. : 'Investment in Human Capital Comment', American Economic Review Vol. 52 (1961) No.4.

15. Miller, H.P. : Annual and Lifetime income in relation to Education 1929-59 American Economic Review, Vol. 50, 1960.

16. Houthakker, H.S. : Education and Income Review of Economics and Statics Vol. 41, 1959.

17. Schultz, T.W. : Investment in Human Capital, American Economic Review, March 1961.

18. Becker, G.S. : Under Investment in College Education? American Economic Review, Vol. 50, May 1960.

19. Schultz, T. W. : Education as a source of economic growth Economics of Education Research Paper 15 August 1961 and Education and Economic Growth; Social Forces influencing American Education, (ed.) H.G. Richey Chicago, 1961.

20. Cash, W.C. : A critique of Man Power Planning in Africa, Economic Development and Cultural Change, Vol. 140965, No.1.

21. Denison, E.F. : The sources of economic growth in the United States and the alternatives before us, a study by the committee for Economic Development, New York.

22. Kothari and Punchamuki : Returns to Education in India, Edited by Baljit Singh, Education as Investment, Meenakshi Prakashan, 1967.

23. Rao, V.K.R.V. : "Indian National Income 1950-1980. New Delhi.

24. Kotpal, A. : An Analysis of the Private Costs and Monetary Benefits of Teacher Education, Meerut, Unpublished Dissertation, 1984.

CHAPTER - IV

FIELD STUDY

(a) Collection of Data

(b) Analysis of Data

(c) Interpretation of Data

REFERENCES

CHAPTER - IV

FIELD STUDY

(a) Collection of Data

For this study the investigator obtained data from secondary sources. The data was collected by questionnaire technique for opportunity cost and monetary benefits of teacher education. Two questionnaires were specially constructed for collecting individual measures on the variables. The respondents were also teacher trainees representing both the sexes of urban and rural areas at the elementary and secondary levels.

The present investigator had satisfied herself that the construction of the questionnaire and method of administration was fairly satisfactory. She can only critically asses of it because the tools were prepared and administered by the previous investigator. The details of respondents, to whom the questionnaire for both variables were given, is shown in Table 1 & 3. For the present study responses to both questionnaire were essential. So as shown in Table No. 2 & 4 unequal numbers of respondents return the questionnaire. There was a problem in choosing equal number of questionnaire from each set. It was arbitrarily decided to keep number of respondents in each set to 50. The first all the respondents who did not return both questionnaires were eliminated. After this 50 respondents were selected randomly for each set (group) from the population shown in Table No. 2 & 4. The details of compositions of samples is shown in Table No.5.

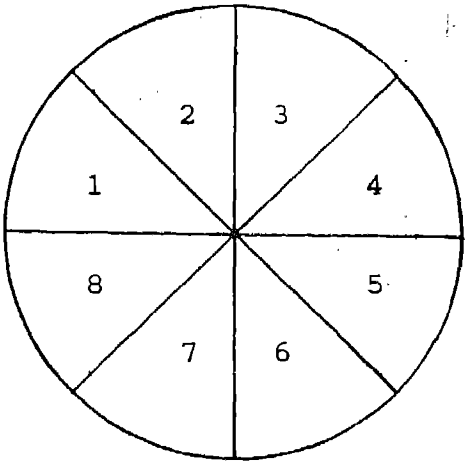


DIAGRAM 1 : Showing the Sample of Respondents to whom the Questionnaire on OPPORTUNITY COSTS was administered

1. El. Male Urban	313	5. Sec. Male Urban	313
2. El. Male Rural	312	6. Sec. Male Rural	312
3. El. Female Urban	313	7. Sec. Female Urban	313
4. El. Female Rural	312	8. Sec. Female Rural	312

SEX	ELEMENTARY		SECONDARY		TOTAL
	URBAN	RURAL	URBAN	RURAL	
MALE	313	312	313	312	1250
FEMALE	313	312	313	312	1250
TOTAL	626	624	626	624	2500

TABLE 1 : Showing the Sample of Respondents to whom the Questionnaire on OPPORTUNITY COSTS was administered.

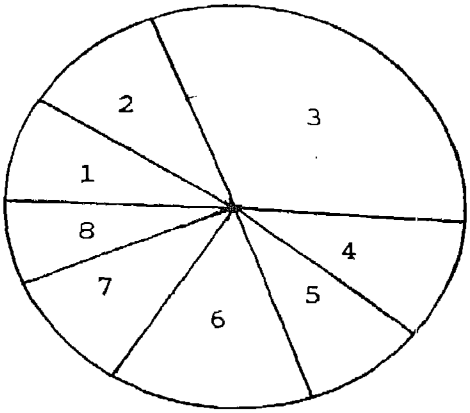


DIAGRAM 2 : Showing the sample of Respondents who returned the Questionnaire on OPPORTUNITY COSTS.

1.	El. Male Urban	72	5.	Sec. Male Urban	74
2.	El. Male Rural	82	6.	Sec. Male Rural	110
3.	El. Female Urban	256	7.	Sec. Female Urban	78
4.	El. Female Rural	76	8.	Sec. Female Rural	54

SEX	ELEMENTARY		SECONDARY		TOTAL
	URBAN	RURAL	URBAN	RURAL	
MALE	72	82	74	110	338
FEMALE	256	76	78	54	464
TOTAL	328	158	152	164	802

TABLE 2 : Showing the sample of respondents who returned the Questionnaire on OPPORTUNITY COSTS.

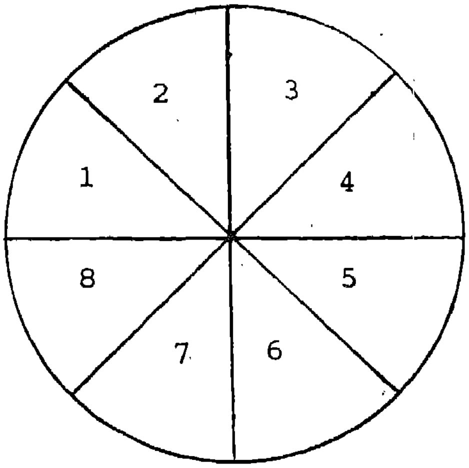


DIAGRAM 3 : Showing the Sample of Respondents to whom the Questionnaire on MONETARY BENEFITS was administered.

1.	El. Male Urban	125	5.	Sec. Male Urban	125
2.	El. Male Rural	125	6.	Sec. Male Rural	125
3.	El. Female Urban	125	7.	Sec. Female Urban	125
4.	El. Female Rural	125	8.	Sec. Female Rural	125

SEX	ELEMENTARY		SECONDARY		TOTAL
	URBAN	RURAL	URBAN	RURAL	
MALE	125	125	125	125	500
FEMALE	125	125	125	125	500
TOTAL	250	250	250	250	1000

TABLE 3 : Showing the Sample of Respondents to whom the Questionnaire on MONETARY BENEFITS was administered.

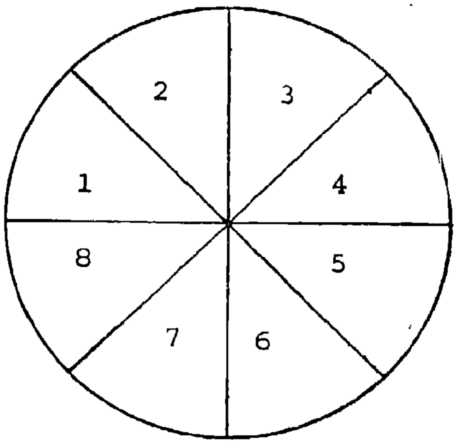


DIAGRAM 5 : Showing the Composition of the Sample of Respondents whose scores were chosen for the Investigation.

1.	El. Male Urban	50	5.	Sec. Male Urban	50
2.	El. Male Rural	50	6.	Sec. Male Rural	50
3.	El. Female Urban	50	7.	Sec. Female Urban	50
4.	El. Female Rural	50	8.	Sec. Female Rural	50

SEX	ELEMENTARY		SECONDARY		TOTAL
	URBAN	RURAL	URBAN	RURAL	
MALE	50	50	50	50	200
FEMALE	50	50	50	50	200
TOTAL	100	100	100	100	400

TABLE 5 : Showing the Composition of the Sample of Respondent whose scores were chosen for the Investigation.

The Pie diagrams have been drawn to illustrate the representations of administration of questionnaires. Conforming to the adage that a "picture is worth than ten thousand words", the investigator often represent her distribution by a frequency histogram. It gave not only an estimate of the average value but also an idea of the amount of variability present in the data. The other diagramatic representations given here comprises of the usual bar graphs to illustrate the central tendencies, the variables and the correlations.

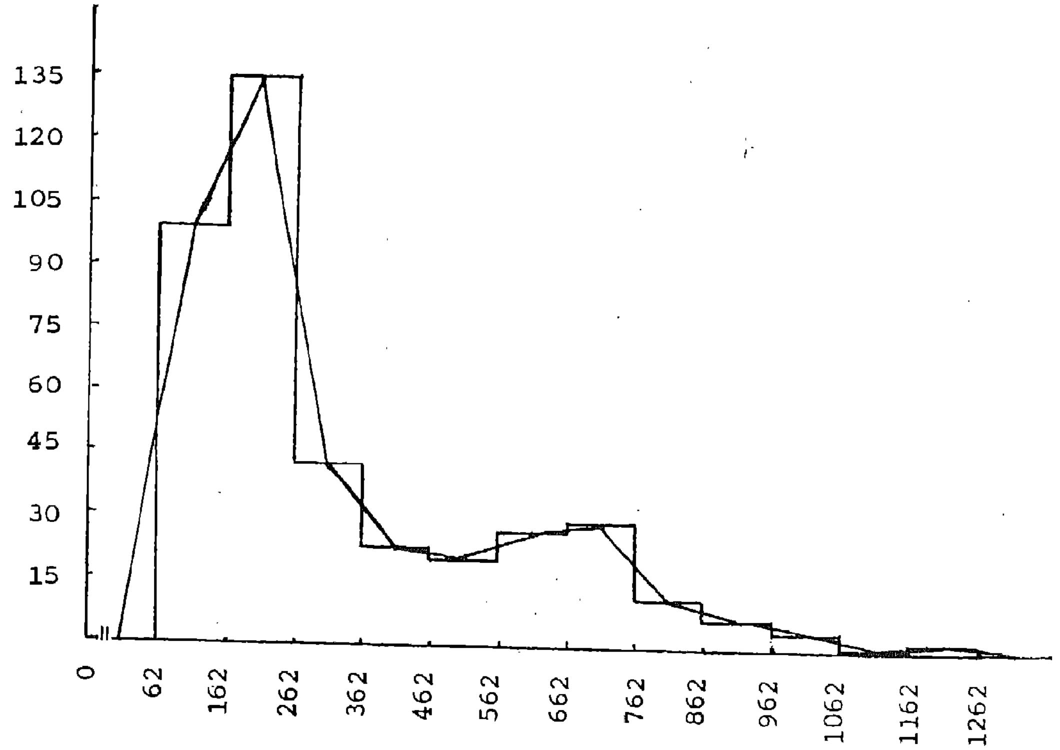
The raw data of 8 different groups E.M.U., E.M.R., E.F.U., E.F.R., S.M.V., S.M. R., S. F.U., S.F.R., are given in appendix 1 to 8 respectively.

(b) Analysis of Data

Statistical Method -

The objective of research, as recognized by all sciences, is to use observation as a basis for answering questions of interest. Even when observations are made systematically, the raw unclassified observations are often of such a nature that in their original form they do not lend themselves to an obvious interpretation with respect to the questions the investigator have posed. She therefore resort to techniques that will reduce the observations to a more manageable form. These techniques involve classifying and operating upon the observations to reduce them to means, variances, correlation coefficients, and other statistical measures. On the basis of these statistical measures the researcher hope to be able to

DIAGRAM NO. 6 : Showing Frequency Polygon Superimposed on Histogram of the Whole Sample of Opportunity Costs.



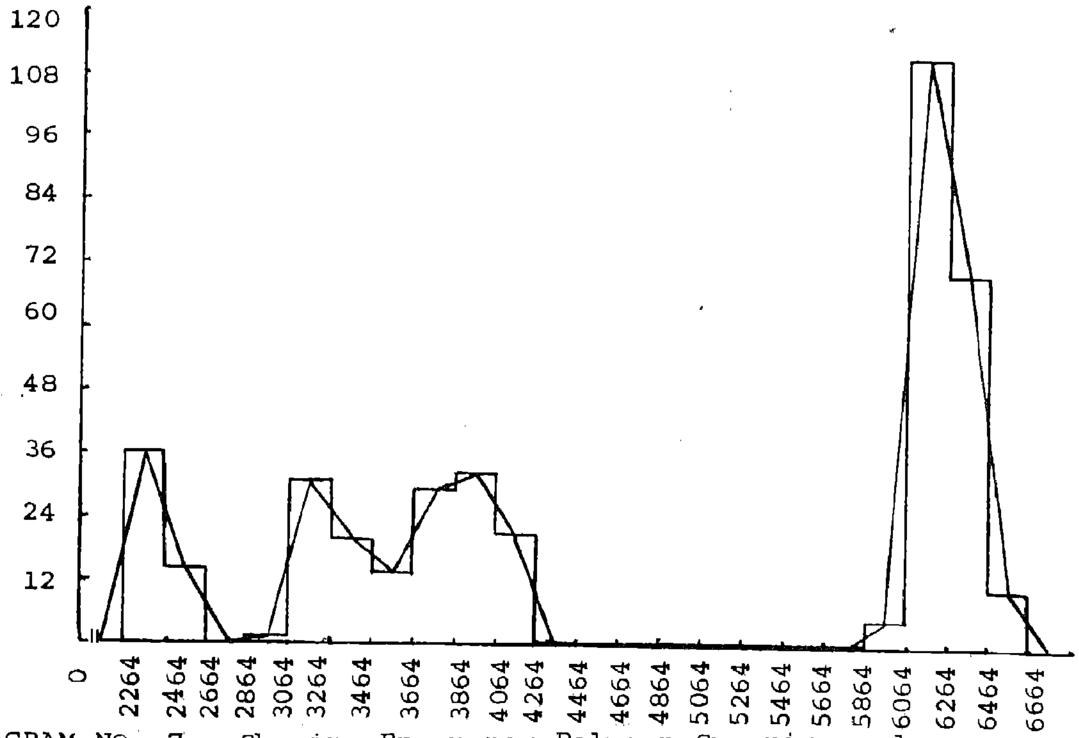


DIAGRAM NO. 7 : Showing Frequency Polygon Superimposed on Histogram of the Whole Sample of Monetary Benefits.

DIAGRAM NO. 8 : Showing Frequency Polygon of the Male & Female Sample of Opportunity Costs.

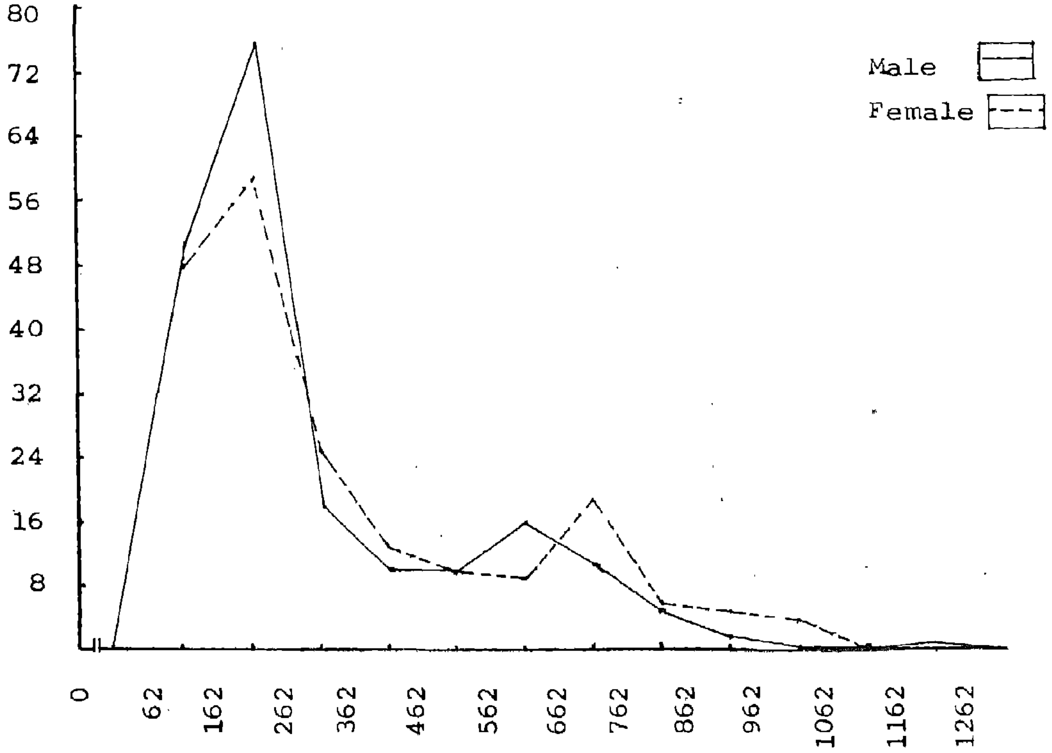
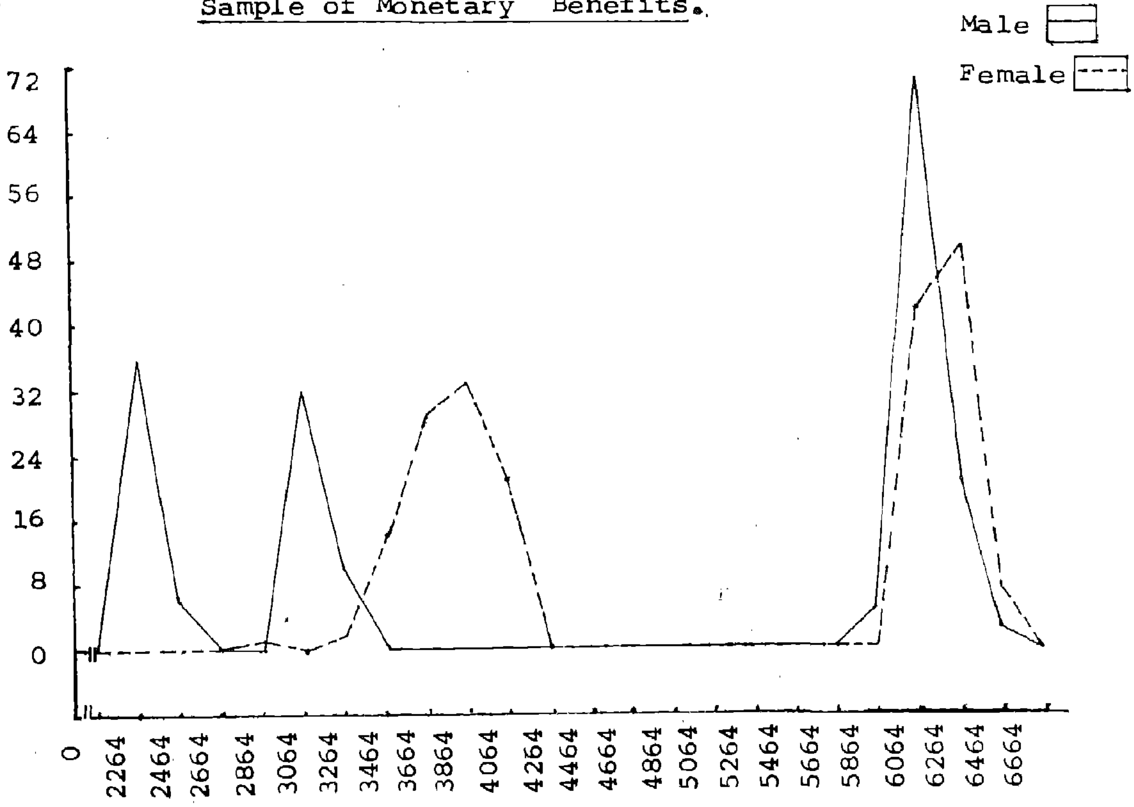


DIAGRAM NO. 9 : Showing Frequency Polygon of the Male & Female Sample of Monetary Benefits.



draw certain conclusions or inferences that will bear upon questions of interest.

Descriptive Statistics-

Techniques which help to indicate such facts as these regarding a large collection of numbers are descriptive in character and techniques for assessing the degree of relationship in situations also fall with in the category of descriptive statistics. In the present study, individual attributes of opportunity cost and monetary benefits was expressed as scores. In statistical analysis one tries to calculate a measure of central tendency of data which could be representative of all of the scores of the group. It also enable the investigator to compare two or more groups in terms of their values. The mean has been chosen as a measure of central tendency as each score contributes to its determination. Mean is that score value which would be assigned each individual or object if the total for the distribution were to be evenly or equally distributed among all the variables involved. It has greatest stability and statistical measures are based upon the mean. The ungrouped data was directly used to compute arithmetic mean.

The next step was to find some measure of the variability of the scores. As the mean was necessarily a point on score scale, any meaningful index of variability must be a distance along the score scale. This distance would be small or large as the variability in the score values was small or large. The resulting index of variability which is amenable to interpretation

TABLE NO. 6 : SHOWING MEAN VALUES AND STANDARD DEVIATIONS FOR OPPORTUNITY COST OF TEACHER EDUCATION.

S. No.	Variables	Mean	SE.M	S.D.	SE. S.D.
1.	Whole sample	330.82	11.46	229.26	8.11
2.	Elementary	190.82	4.59	64.97	3.25
3.	Secondary	470.83	17.56	248.39	12.42
4.	Male	349.58	17.32	244.93	12.25
5.	Female	312.07	14.90	210.77	10.54
6.	Urban	276.29	12.39	175.20	8.76
7.	Rural	385.36	18.50	261.68	13.08
8.	Elementary male	189.79	6.93	69.27	4.90
9.	Elementary female	191.85	6.03	60.35	4.27
10.	Secondary male	509.37	25.32	253.21	17.90
11.	Secondary female	432.28	23.73	237.28	16.78
12.	Elementary urban	213.70	6.86	68.63	4.85
13.	Elementary rural	167.94	5.18	51.82	3.66
14.	Secondary urban	338.88	22.10	221.01	15.63
15.	Secondary rural	602.77	19.93	199.32	14.09
16	Urban male	293.66	19.71	197.10	13.94
17.	Rural male	405.50	27.36	273.64	19.35
18.	Urban female	258.92	14.81	148.11	10.47
19.	Rural female	365.21	24.75	247.51	17.50
20.	Elementary male urban	213.74	11.00	77.80	7.78
21.	Elementary male rural	165.84	6.92	48.95	4.89
22.	Elementary female urban	213.66	8.21	58.02	5.80
23.	Elementary female rural	170.04	7.70	54.46	5.45
24.	Secondary male urban	373.58	34.31	242.64	24.26
25.	Secondary male rural	645.16	25.49	180.23	18.02
26.	Secondary female urban	304.18	26.99	190.82	19.08
27.	Secondary female rural	560.38	29.45	208.27	20.83

DIAGRAM NO. 10 : Showing Mean Values for Opportunity Costs of Teacher Education.

SCALE 10 = 1 mm.

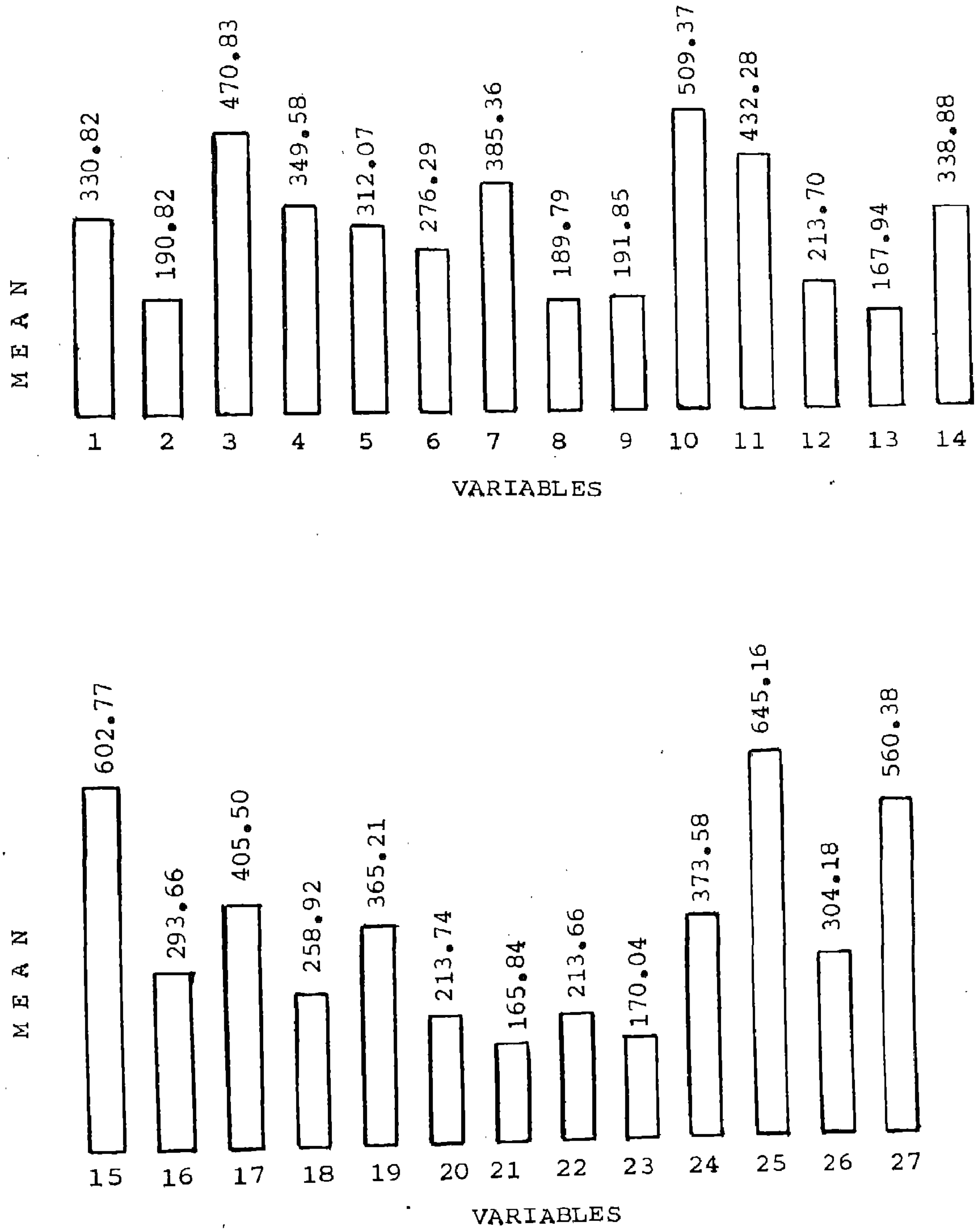


DIAGRAM NO. 11 : Showing the Standard Deviation of Opportunity Costs of Teacher Education.

SCALE 50=1 cm.

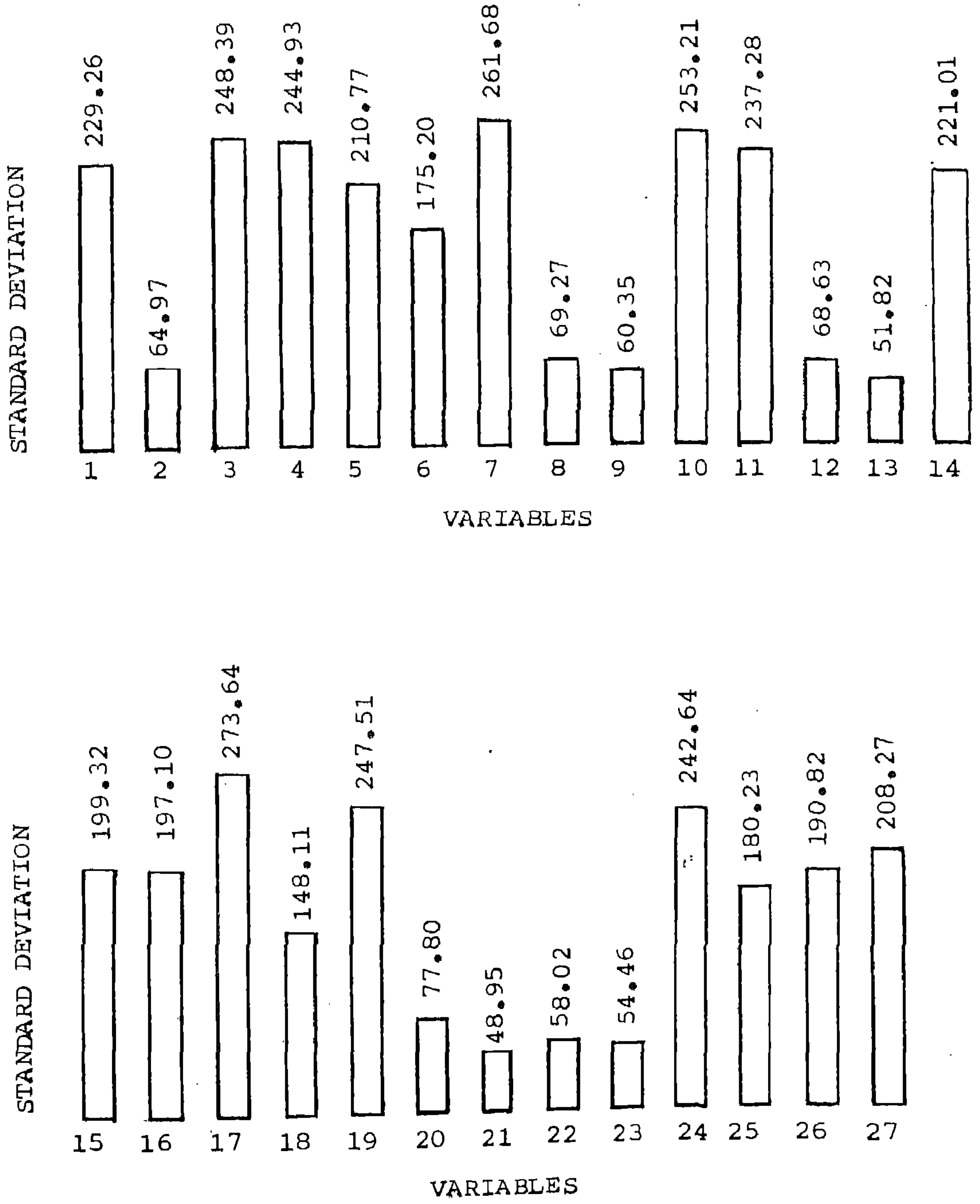


TABLE NO.. 7 : SHOWING MEAN VALUES AND STANDARD DEVIATIONS FOR MONETARY BENEFITS OF TEACHER EDUCATION.

S. No.	Variables	Mean	SE.M	S.D.	SE. S.D.
1.	Whole sample	4806.17	240.3	1519.75	53.73
2.	Elementary	3354.08	44.04	622.83	31.14
3.	Secondary	6258.27	8.44	119.33	5.97
4.	Male	4521.88	121.51	1718.45	85.92
5.	Female	5090.46	86.74	1226.62	61.33
6.	Urban	4965.86	96.32	1362.11	68.11
7.	Rural	4646.49	116.47	1647.11	83.36
8.	Elementary male	2831.40	42.41	424.12	29.99
9.	Elementary female	3876.76	22.26	222.61	15.74
10.	Secondary male	6212.37	10.38	103.78	7.34
11.	Secondary female	6304.16	11.62	116.17	8.21
12.	Elementary urban	3640.56	41.83	418.34	29.58
13.	Elementary rural	3067.60	66.08	660.81	46.73
14.	Secondary urban	6291.15	15.12	151.19	10.69
15.	Secondary rural	6225.38	5.88	58.80	4.16
16.	Urban male	4714.20	147.33	1473.27	104.18
17.	Rural male	4329.57	191.35	1913.54	135.31
18.	Urban female	5217.51	118.89	1188.90	84.07
19.	Rural female	4963.41	125.04	1250.37	88.41
20.	Elementary male urban	3245.60	14.74	104.24	10.42
21.	Elementary male rural	2417.20	10.75	75.99	7.60
22.	Elementary female urban	4035.52	23.31	164.81	16.48
23.	Elementary female rural	3718.00	20.75	146.75	14.68
24.	Secondary male urban	6182.80	18.24	128.96	12.90
25.	Secondary male rural	6241.94	7.95	56.25	5.63
26.	Secondary female urban	6399.50	10.59	74.90	7.49
27.	Secondary female rural	6208.82	8.00	56.58	5.66

DIAGRAM NO. 12 : Showing the Mean Values of Monetary Benefits of Teacher Education.

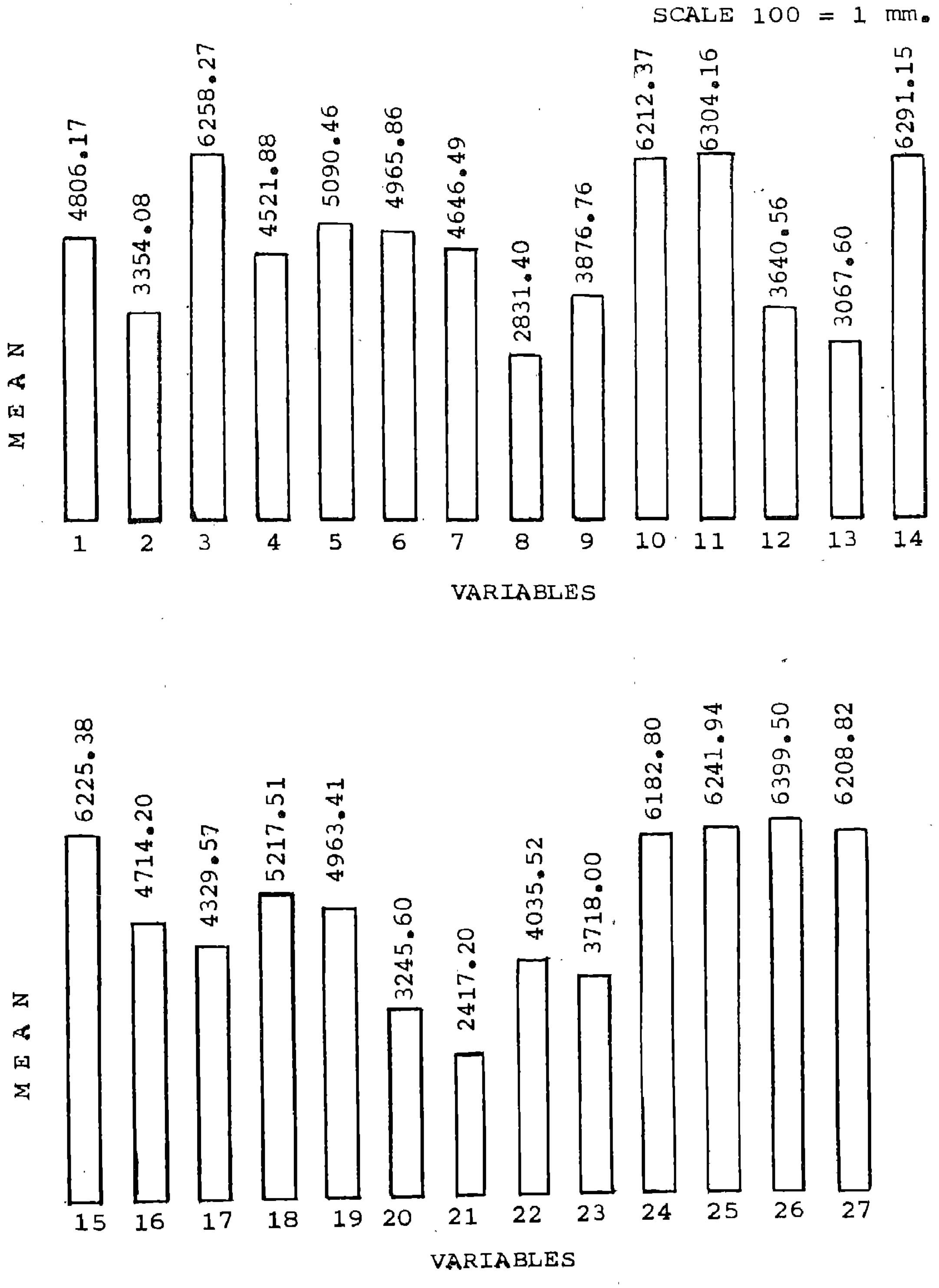


DIAGRAM NO. 13 : Showing the Standard Deviations for Monetary Benefits of Teacher Education.

SCALE 20 = 1 mm.

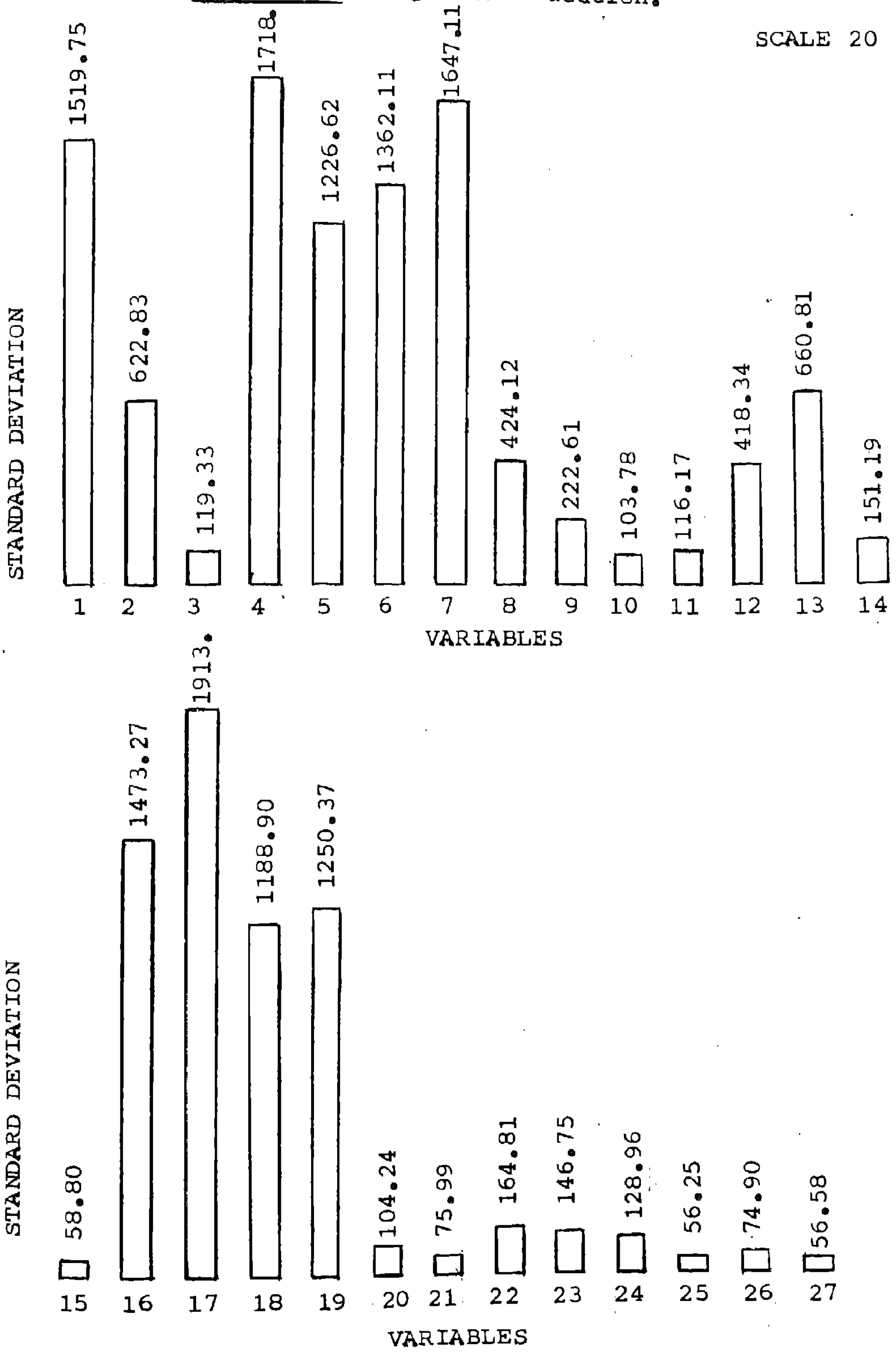
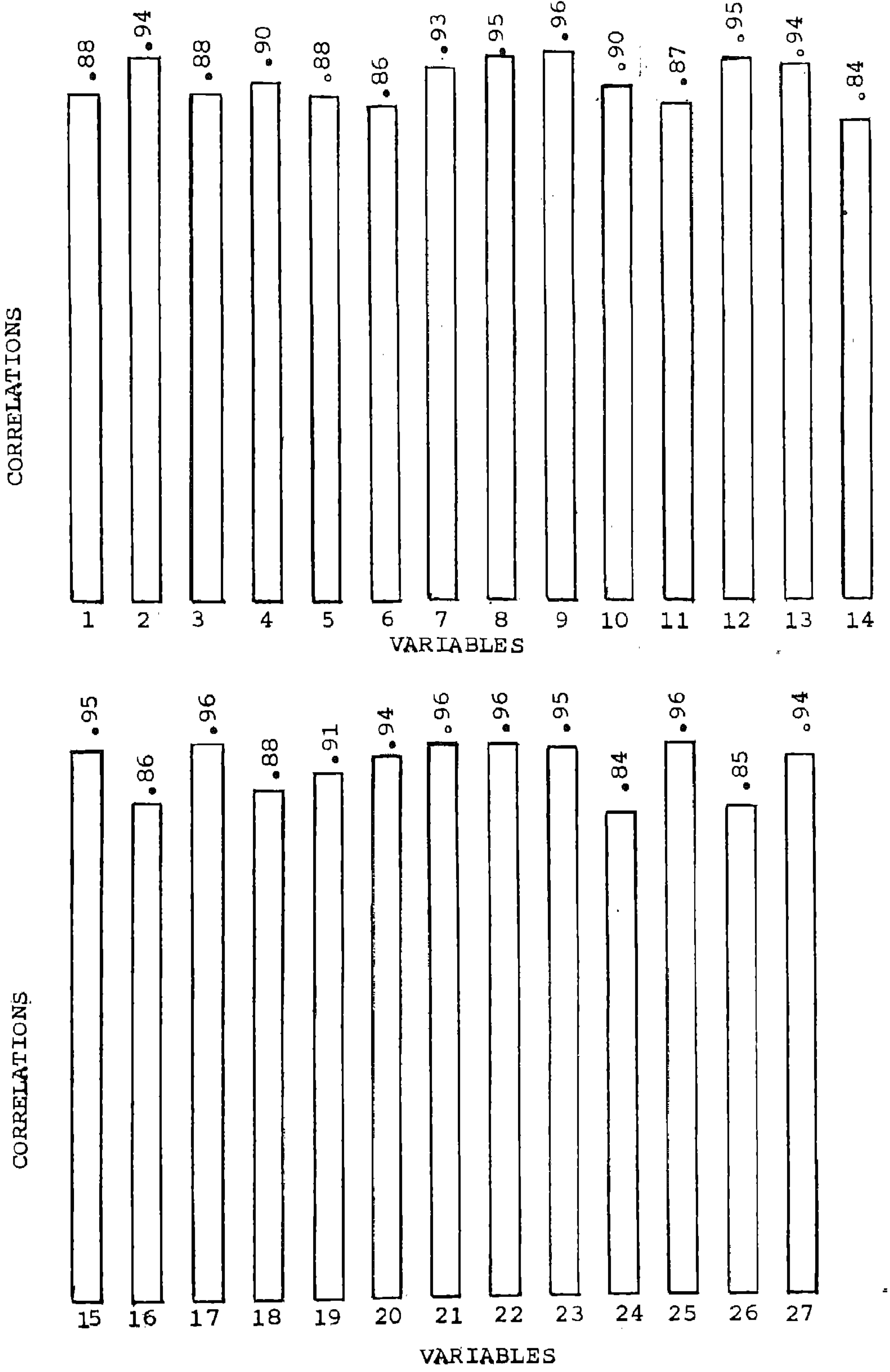


Table No. 8 : Showing significance of Correlations between Opportunity Costs and Monetary Benefits of Teacher Education.

S. No.	Variables	N	EX	EY	r	SE	CONFIDENCE INT. .05 level		.01 level	
							+	-	+	-
1.	Whole sample	400	132329	1922469	+.88	.01	.90	.86	.91	.85
2.	Elementary	200	38164	670816	+.94	.01	.96	.92	.97	.91
3.	Secondary	200	94165	1251653	+.88	.02	.92	.84	.93	.83
4.	Male	200	69916	904377	+.90	.01	.92	.88	.93	.87
5.	Female	200	62413	1018092	+.88	.02	.92	.84	.93	.83
6.	Urban	200	55258	993171	+.86	.02	.90	.82	.91	.81
7.	Rural	200	77071	929298	+.93	.01	.95	.91	.96	.90
8.	Elementary male	100	18979	283140	+.95	.01	.97	.93	.98	.92
9.	Elementary female	100	19185	387676	+.96	.01	.98	.94	.99	.93
10.	Secondary male	100	50937	621237	+.90	.02	.94	.86	.95	.85
11.	Secondary female	100	43228	630416	+.87	.02	.91	.83	.92	.82
12.	Elementary urban	100	21370	364056	+.95	.01	.97	.93	.98	.92
13.	Elementary Rural	100	16794	306760	+.94	.01	.96	.92	.97	.91
14.	Secondary urban	100	33888	629115	+.84	.03	.90	.78	.92	.76
15.	Secondary rural	100	60277	622538	+.95	.01	.97	.93	.98	.92
16.	Urban male	100	29366	471420	+.86	.03	.92	.80	.94	.78
17.	Rural male	100	40550	432957	+.96	.01	.98	.94	.99	.93
18.	Urban female	100	25892	521751	+.88	.02	.92	.84	.93	.83
19.	Rural female	100	36521	496341	+.91	.02	.95	.87	.96	.86
20.	Elementary male urban	50	10687	162280	+.94	.02	.98	.90	.99	.89
21.	Elementary male rural	50	8292	120860	+.96	.01	.98	.94	.99	.93
22.	Elementary female urban	50	10683	201776	+.96	.01	.98	.94	.99	.93
23.	Elementary female rural	50	8502	185900	+.95	.01	.97	.93	.98	.92
24.	Secondary male urban	50	18679	309140	+.84	.04	.92	.76	.94	.74
25.	Secondary male rural	50	32258	312097	+.96	.01	.98	.94	.99	.93
26.	Secondary female urban	50	15209	319975	+.85	.04	.93	.77	.95	.75
27.	Secondary female rural	50	28019	310441	+.94	.02	.98	.90	.99	.89

DIAGRAM NO. 14 : Showing Coefficients of Correlations Between Opportunity Costs and Monetary Benefits.

SCALE .10=1 cm.



as a distance along the original score scale is known as the standard deviation. It is by far the most important and most widely used index of variability. It is selected because it is more stable and accurate estimate of the population parameter and much further statistical work involves their use. Again, the ungrouped data is used to compute the variance by using the formula for calculation of standard deviation. Standard deviation is the square root of the variance.

In research studies it is necessary or desirable to examine the relationship between two variables, such as the rating on two different scales or the scores on two different tests. In other words the investigator attempt to determine in what way and to what extent the variables co-relate or correlate. The most widely and commonly used measure of correlation is the Pearson Product Moment Correlation Coefficient. This measure is used where the variables are quantitative, that is, of the interval or ratio type. This method is denoted by the letter 'r'. The formula for the correlation coefficient in deviation score form is used for computational purpose by the investigator.

Inferential Statistics

Statistical techniques which enable the investigator to determine what to expect by way of error in the inferences she makes about population facts from examining corresponding sample facts belong to the category of statistical inference.

It is scientific inference, which in turn is inductive inference, the making of general statements from the study of particular cases. Means and other measures computed from sampes are called statistics, and are subject to fluctuation of sampling. Measure descriptive of a population are called parameters and are to be thought of as fixed reference values. The degree to which a sample mean represents its parameter is an index of the significance of the computed sample mean. The standard error describes the variability of a statistic over repeated sampling. The standard deviation of the sampling distribution is called the standard error. But it is not costomary to do all the calculation the investigator has just done in order to interpret a mean and its standard error. By common consent an arbitrary choice has been made to adopt two particular levels of confidence. One is known as the 5 percent level, or 05 level, and the other as the 1 percent level, or 01 level. The confidence interval may be prescribed simply in terms of their lower and upper limits or bounds.

For an estimate of the population standard deviation is needed in order to estimate the value of the test statistic z that is referred to a critical region R in testing a hypothesis about the mean of some population. The theory of testing statistical hypotheses required that all of these estimates be single valued. However, in all situations in which single valued estimates are not thus required, interval estimates are to be preferred. The testing of a statistical hypothesis is

Table No 9 : Showing significance of difference between Mean values for Opportunity Cost of Teacher Education.

S. No.	Variables	Mean	SE.D.	C.R.	Significance
1.	Elementary	190.82	18.16	15.42	.01
	Secondary	470.83			
2.	Male	349.58	22.85	1.64	Insig.
	Female	312.07			
3.	Urban	276.29	22.27	4.90	.01
	Rural	385.36			
4.	Elementary male	189.79	9.19	0.22	Insig.
	Elementary female	191.85			
5.	Secondary male	509.37	34.70	2.22	.05
	Secondary female	432.28			
6.	Elementary urban	213.70	8.60	5.32	.01
	Elementary rural	167.94			
7.	Secondary urban	338.88	29.76	8.87	.01
	Secondary rural	602.77			
8.	Urban male	293.66	33.72	3.32	.01
	Rural male	405.50			
9.	Urban female	258.92	28.84	3.69	.01
	Rural female	365.21			
10.	Elementary male urban	213.74	13.00	3.68	.01
	Elementary male rural	165.84			
11.	Elementary female urban	213.66	11.25	3.88	.01
	Elementary female rural	170.04			
12.	Secondary male urban	373.58	42.75	6.35	.01
	Secondary male rural	645.16			
13.	Secondary female urban	304.18	39.95	6.41	.01
	Secondary female rural	560.38			

Table No. 10 : Showing significance of difference between Mean values for Monetary Benefits of Teacher Education.

S. No.	Variables	Mean	SE.D.	C.R.	Significance
1.	Elementary	3354.08	44.84	64.77	.01
	Secondary	6258.27			
2.	Male	4521.88	149.29	3.81	.01
	Female	5090.46			
3.	Urban	4965.85	151.13	2.11	.05
	Rural	4646.49			
4.	Elementary male	2831.40	47.90	21.82	.01
	Elementary female	3876.76			
5.	Secondary male	6212.37	15.58	5.89	.01
	Secondary female	6304.16			
6.	Elementary urban	3640.56	78.21	7.33	.01
	Elementary rural	3067.60			
7.	Secondary urban	6291.15	16.22	4.05	.01
	Secondary rural	6225.38			
8.	Urban male	4714.20	241.50	1.59	Insig.
	Rural male	4329.57			
9.	Urban female	5217.51	172.54	1.47	Insig.
	Rural female	4963.41			
10.	Elementary male urban	3245.60	18.24	45.42	.01
	Elementary male rural	2417.20			
11.	Elementary female urban	4035.52	31.21	10.17	.01
	Elementary female rural	3718.00			
12.	Secondary male urban	6182.80	19.90	2.97	.01
	Secondary male rural	6241.94			
13.	Secondary female urban	6399.50	13.28	14.36	.01
	Secondary female rural	6208.82			

Table No. 11 : Showing significance of difference between S.Ds. for Opportunity Cost of Teacher Education.

S. No.	Variables	S.D.	SE.D.	C.R.	Significance
1.	Elementary	64.97	12.84	14.28	.01
	Secondary	248.39			
2.	Male	244.93	16.16	2.11	.05
	Female	210.77			
3.	Urban	175.20	15.74	12.22	.01
	Rural	261.68			
4.	Elementary male	69.27	6.50	1.37	Insig.
	Elementary female	60.35			
5.	Secondary male	253.21	24.54	0.65	Insig.
	Secondary female	237.28			
6.	Elementary urban	68.63	6.08	2.76	.01
	Elementary rural	51.82			
7.	Secondary urban	221.01	21.04	1.03	Insig.
	Secondary rural	199.32			
8.	Urban male	197.10	23.85	3.21	.01
	Rural male	273.64			
9.	Urban female	148.11	20.39	4.87	.01
	Rural female	247.51			
10.	Elementary male urban	77.80	9.19	3.14	.01
	Elementary male rural	48.95			
11.	Elementary female urban	58.02	7.96	0.45	Insig.
	Elementary female rural	54.46			
12.	Secondary male urban	242.64	30.22	2.07	.05
	Secondary male rural	180.23			
13.	Secondary female urban	190.82	28.25	0.62	Insig.
	Secondary female rural	208.27			

Table No. 12 : Showing significance of difference between S.Ds. for Monetary Benefits of Teacher Education.

S. No.	Variables	S.D.	SE.D.	C.R.	Significance
1.	Elementary	622.83	31.71	15.88	.01
	Secondary	119.33			
2.	Male	1718.45	105.57	4.66	.01
	Female	1226.62			
3.	Urban	1362.11	106.87	2.67	.01
	Rural.	1647.11			
4.	Elementary male	424.12	33.87	0.06	Insig.
	Elementary female	222.61			
5.	Secondary male	103.78	11.02	1.12	Insig.
	Secondary female	116.17			
6.	Elementary urban	418.34	55.30	4.38	.01
	Elementary rural	660.81			
7.	Secondary urban	151.19	11.47	8.05	.01
	Secondary rural	58.80			
8.	Urban male	1473.27	170.76	2.58	.01
	Rural male	1913.54			
9.	Urban female	1188.90	122.00	0.50	Insig.
	Rural female	1250.37			
10.	Elementary male urban	104.24	12.90	2.19	.05
	Elementary male rural	75.99			
11.	Elementary female urban	164.81	22.07	0.82	Insig.
	Elementary female rural	146.75			
12.	Secondary male urban	128.96	14.07	5.17	.01
	Secondary male rural	56.25			
13.	Secondary female urban	74.90	9.39	1.95	Insig.
	Secondary female rural	56.58			

Table No.13: Showing significance of difference of 'r'

S. No.	Variables	r	Z Scores	SE.D Z	C.R.	Significance
1.	Elementary	.94	1.75	0.10	3.6	.01
	Secondary	.88	1.39			
2.	Male	.90	1.47	0.10	1.00	Insig.
	Female	.88	1.37			
3.	Urban	.86	1.30	0.10	3.6	.01
	Rural	.93	1.66			
4.	Elementary male	.95	1.81	0.14	0.57	Insig.
	Elementary female	.96	1.89			
5.	Secondary male	.90	1.46	0.14	0.78	Insig.
	Secondary female	.87	1.35			
6.	Elementary urban	.95	1.79	0.14	0.57	Insig.
	Elementary rural	.94	1.71			
7.	Secondary urban	.84	1.21	0.14	0.22	Insig.
	Secondary rural	.95	1.83			
8.	Urban male	.86	1.30	0.14	4.28	.01
	Rural male	.96	1.90			
9.	Urban female	.88	1.37	0.14	1.14	Insig.
	Rural female	.91	1.53			
10.	Elementary male urban	.94	1.74	0.20	1.00	Insig.
	Elementary male rural	.96	1.94			
11.	Elementary female urban	.96	1.98	0.20	0.7	Insig.
	Elementary female rural	.95	1.84			
12.	Secondary male urban	.84	1.22	0.20	3.85	.01
	Secondary male rural	.96	1.99			
13.	Secondary female urban	.85	1.25	0.20	2.35	.05
	Secondary female rural	.94	1.72			

a process for drawing some inference about the value of a population parameter from the information contained in a sample selected from the population.

Multiple Correlation-

In many investigations data on more then two variables were gathered and forms of multivariate analysis were required. The forms of co-relational analysis which might be applied to multivariate data were partial and multiple correlation. Partial correlation dealt with the residual relationship between two variables where the common influence of one or more other variables had been removed. Multiple correlation dealt with the calculation of weights which produce the maximum possible correlation between a criterion variable and the weighted sum of two or more predictor variables. Its purpose was to maximize the efficiency of prediction. The multiple correlation was related to the intercorrelation between independent variable as well as to their correlation with the dependent variable. The correlation coefficient might be used to predict or estimate a score on an unknown variable from knowledge of a score on a known variable. The multiple regression equation was set up by way of partial correlation and its accuracy as a predicting instrument was given by the coefficient of multiple correlation.

Doolittle method was used by the investigator for the solution of a multiple correlation with more than three variables. The procedure was made step by step as suggested

TABLE NO. 14 : INTERCORRELATIONS AMONG DIFFERENT VARIABLES IN OPPORTUNITY COST.

S. No.	Variables	El. M.U.	El. M.R.	El. F.U.	El. F.R.	Sec. M.U.	Sec. M.R.	Sec. F.U.	Sec. F.R.
1.	Elementary male urban	1.00	0.71	0.59	0.65	0.88	0.70	0.52	0.68
2.	Elementary male rural	0.71	-	0.79	0.53	0.73	0.90	0.64	0.50
3.	Elementary female urban	0.59	0.79	-	0.69	0.59	0.74	0.85	0.73
4.	Elementary female rural	0.65	0.53	0.69	-	0.63	0.55	0.69	0.83
5.	Secondary male urban	0.88	0.73	0.59	0.63	-	0.77	0.55	0.66
6.	Secondary male rural	0.70	0.90	0.74	0.55	0.77	-	0.62	0.49
7.	Secondary female urban	0.52	0.64	0.85	0.69	0.55	0.62	-	0.76
8.	Secondary female rural	0.68	0.50	0.73	0.83	0.66	0.49	0.76	-

TABLE NO. 15 : 'β'Values and 'R' of different variables after droppping the Elementary male urban in Opportunity cost.

S.No.	Variables	
2.	El. Male Rural	.34
3.	El. Female Urban	.05
4.	El. Female Rural	.07
5.	Sec. Male Urban	.62
6.	Sec. Male Rural	-.11
7.	Sec. Female Urban	-.19
8.	Sec. Female Rural	.29
R^2 = .76	R = .87	

TABLE NO. 16 : 'β'Values and 'R' of different variables after dropping the Elementary Male Rural in Opportunity cost.

S.No.	Variabes	
1.	El. Male Urban	.23
3.	El. Female Urban	.40
4.	El. Female Rural	-.05
5.	Sec. Male Urban	.05
6.	Sec. Male Rural	.53
7.	Sec. Female Urban	.03
8.	Sec. Female Rural	-.22
R^2 = .53	R = .73	

TABLE NO. 17 : 'β' Values and 'R' of different variables after droppping the Elementary Female urban in Opportunity cost.

S.No.	Variables	
1.	El. Male Urban	-.04
2.	El. Male Rural	.44
4.	El. Female Rural	.04
5.	Sec. Male Urban	-.25
6.	Sec. Male Rural	.17
7.	Sec. Female Urban	.38
8.	Sec. Female Rural	.30
R^2 = .82	R = .91	

TABLE No. 18 : 'β'Values and 'R' of different variables after dropping the Elementary Female Rural in Opportunity cost.

S.No.	Variables	
1.	El. Male Urban	.11
2.	El. Male Rural	-.12
3.	El. Female Urban	.08
5.	Sec. Male Urban	-.04
6.	Sec. Male Rural	.21
7.	Sec. Female Urban	.03
8.	Sec. Female Rural	.66
R^2 = .83	R = .91	

TABLE NO.19 : 'β' Values and 'R' of different variables after dropping the Secondary Male Urban in Opportunity Cost

S.NO.	Variables	
1.	El. Male Urban	.56
2.	El. Male Rural	-.04
3.	El. Female Urban	-.28
4.	El. Female Rural	-.02
6.	Sec. Male Rural	.41
7.	Sec. Female Urban	.06
8.	Sec. Female Rural	.23
R^2 = .73	R = .86	

TABLE No.20:'β' Values and 'R' of different variables after dropping the Secondary Male Rural in Opportunity Cost

S.No.	Variables	
1.	El. Male Urban	-.09
2.	El. Male Rural	.60
3.	El. Female Urban	.17
4.	El. Female Rural	.11
5.	Sec. Male Urban	.37
7.	Sec. Female Urban	.02
8.	Sec. Female Rural	-.22
R^2 = .56	R = .75	

TABLE NO. 21 : 'β' Values and 'R' ot different variables after dropping the Secondary Female Urban in Opportunity Cost.

S.No.	Variables	
1.	El. Male Urban	-.23
2.	El. Male Rural	.05
3.	El. Female Urban	.59
4.	El. Female Rural	.02
5.	Sec. Male Urban	.09
6.	Sec. Male Rural	.03
8.	Sec. Female Rural	.38
R^2 = .76	R = .87	

TABLE NO. 22 : 'β' Values and 'R' of different variables after dropping the Secondary Female Rural in Opportunity Cost.

S.No.	Variables	
1.	El. Male Urban	.26
2.	El. Male Rural	-.27
3.	El. Female Urban	.34
4.	El. Female Rural	.38
5.	Sec. Male Urban	.23
6.	Sec. Male Rural	-.24
7.	Sec. Female Urban	.28
R^2 = .67	R = .82	

TABLE NO. 23 : INTERCORRELATIONS AMONG DIFFERENT VARIABLES IN MONETARY BENEFIT.

S. No.	Variables	El. M.U.	El. M.R.	El. F.U.	El. F.R.	Sec. M.U.	Sec. M.R.	Sec. F.U.	Sec. F.R.
1.	Elementary male urban	1.00	0.91	0.83	0.90	1.00	0.91	0.83	0.90
2.	Elementary male rural	0.91	-	0.91	0.83	0.91	1.00	0.91	0.83
3.	Elementary female urban	0.83	0.91	-	0.91	0.83	0.91	1.00	0.91
4.	Elementary female rural	0.90	0.83	0.91	-	0.90	0.83	0.91	1.00
5.	Secondary male urban	1.00	0.91	0.83	0.90	-	0.91	0.83	0.90
6.	Secondary male rural	0.91	1.00	0.91	0.83	0.91	-	0.91	0.83
7.	Secondary female urban	0.83	0.91	1.00	0.91	0.83	0.91	-	0.91
8.	Secondary female rural	0.90	0.83	0.91	1.00	0.90	0.83	0.91	-

TABLE No. 24 : 'β' Values and 'R' of different variables after dropping the Elementary Male Urban in Monetary Benefit.

S.No.	Variables	
2.	El. Male Rural	.57
3.	El. Female Urban	.14
4.	El. Female Rural	.08
5.	Sec. Male Urban	.98
6.	Sec. Male Rural	.56
7.	Sec. Female Urban	-.14
8.	Sec. Female Rural	-.07
R^2 = .91	R = .95	

TABLE NO. 25 : 'β' Values and 'R' of different variables after dropping the Elementary Male Rural in Monetary Benefit.

S.No.	Variables	
1.	El. Male Urban	.21
3.	El. Female Urban	-.29
4.	El. Female Rural	-.01
5.	Sec. Male Urban	-.20
6.	Sec. Male Rural	.99
7.	Sec. Female Urban	.29
8.	Sec. Female Rural	.00
R^2 = .89	R = .94	

TABLE NO. 26 : 'β' Values and 'R' of different variables after dropping the Elementary Female Urban in Monetary Benefit.

S.No.	Variables	
1.	El. Male Urban	.03
2.	El. Male Rural	-.14
4.	El. Female Rural	.08
5.	Sec. Male Urban	-.04
6.	Sec. Male Rural	.14
7.	Sec. Female Urban	1.00
8.	Sec. Female Rural	-.08
R^2 = .91	R = .95	

TABLE NO. 27 : 'β' Values and 'R' of different variables after dropping the Elementary Female Rural in Monetary Benefit.

S.No.	Variables	
1.	El. Male Urban	-.09
2.	El. Male Rural	-.03
3.	El. Female Urban	.39
5.	Sec. Male Urban	.11
6.	Sec. Male Rural	.03
7.	Sec. Female Urban	-.39
8.	Sec. Female Rural	.99
R^2 = .96	R = .98	

TABLE NO. 28: 'β' Values and 'R' of different variables after dropping the Secondary Male Urban in Monetary Benefit.

S.No.	Variables	
1.	El. Male Urban	.99
2.	El. Male Rural	-.41
3.	El. Female Urban	-.27
4.	El. Female Rural	.02
5.	Sec. Male Rural	.42
7.	Sec. Female Urban	.25
8.	Sec. Female Rural	.00
R^2 = .91	R = .95	

TABLE NO. 29: 'β' Values and 'R' of different variables after dropping the Secondary Male Rural in Monetary Benefit.

S.No.	Variables	
1.	El. Male Urban	-.21
2.	El. Male Rural	.99
3.	El. Female Rural	.41
4.	El. Female Rural	.00
5.	Sec. Male Urban	.20
7.	Sec. Female Urban	-.40
8.	Sec. Female Rural	.00
R^2 = .89	R = .94	

TABLE NO. 30 : 'β' Values and 'R' of different variables after dropping the Secondary Female Urban in Monetary Benefit.

S.No.	Variables	
1.	El. Male Urban	.06
2.	El. Male Rural	-.30
3.	El. Female Urban	.99
4.	El. Female Rural	-.07
5.	Sec. Male Urban	-.05
6.	Sec. Male Rural	.31
8.	Sec. Female Rural	.07

$R^2 = .90$ R = .95

TABLE NO. 31 : 'β'Values and 'R' of different variables after dropping the Secondary Female Rural in Monetary Benefit.

S.No.	Variables	
1.	El. Male Urban	.06
2.	El. Male Rural	.23
3.	El. Female Urban	-.22
4.	El. Female Rural	.98
5.	Sec. Male Urban	-.05
6.	Sec. Male Rural	-.25
7.	Sec. Female Urban	.25

$R^2 = .90$ R = .95

by Guilford. It was actually called simultaneous equation. The unknowns were the beta coefficients, and there were as many equations as unknowns. For the solution of the problem the table was set up in terms of blocks of work, each one begins with the entrance of correlations for a new variable and ending by dividing by a number that will assure a -1.0000 as the first number in the last row of that block. The work was found to be very systematic throughout. Any variable might be treated as the dependent variable, but it must then occupy the next to the last column in the table. That type of tables had not been included in the body of this dissertation. The end result gave the beta coefficients, which was found by means of a "back solution", so called because the investigator worked in a backward direction, as compared with the work of the tables. First of all beta found was $\beta 18$, than it worked in a backward direction as $\beta 17$, $\beta 16$, $\beta 15$, $\beta 14$, $\beta 13$, and $\beta 12$, was found. For the satisfaction of the result, the check upon the calculation of the beta coefficients was applied by using the formula for it.

(c) Interpretation of Data

The techniques used to facilitate the interpretation of collections of numerical data were called statistical method. Its essential purpose was to describe and draw inferences about the numerical properties of populations. The method of obtaining inferences involved inductive

reasoning and probability theory, as has been illustrated through the tables in the previous pages.

Normal distribution in the population has favoured normal distribution of means and other statistics. In the smaller samples the form of the distribution of the population affected the form of the means. The knowledge of the form of sampling distribution of a statistic was seen very important, as the investigator's ability to draw conclusions depended upon it. Even when the population distribution was not normal the means derived from sampling had the likely hood to be almost normal distribution. The purpose of measures of central value is description. When we attempt to reduce a mass of scores or a distribution of measures to a few descriptive constants, the mean is descriptive terms which more or less adequately depict the average or typical score, and the choice between the two is frequently determined on the basis of which is more typical. The standard deviation fluctuated from sample to sample as shown in Table 6 & 7.

It was of more importance to examine the relationship of one variable to another than to measure performance in either alone. Perfect relationship was expressed by a coefficient of 1.00 and just no relationship by a coefficient to .00. But relationship might also be negative. Negative coefficients might range from –1.00 up to .00. 'r' from .00 to ± .20 denotes indifferent, ± .20 to ± .40

denotes low correlation, ± .40 to ± .70 denotes substantial and from ± .70 to ± 1.00 denotes high to very high relationship. In the present investigation all the values are higher than +.84. So it is observed by the investigator that the values possed a very high relationship with each other. The coefficient of correlation did not give directly anything like a percentage of relationship. It was an index number, not a measurement on a linear scale of equal units. For computation of 'r', the purpose of it was also kept in mind. In short, the coefficient of correlation was purely relative to the circumstances under which it was obtained and should be interpreted in the light of those circumstances, very rarely, certainly, in any absolute sense. The table showing the coefficients of correlation was infrequently concerned with fixing confidence intervals and show their significance which happen to be highly significant and thereby dependable, due to very negligeable sampling and other errors of measurement.

The correlation had proved to be most useful in answering the questions of interrelationship. It enabled the investigator to answer the question that which factor effect the cost so much under what circumstances, in what population and what kind of benefits, measured by what instrument, or judged by what standard.

Just like in scientific investigation the investigator proceeded from hypothesis to hypothesis to come to

the conclusion. Data analysed above showed that the observations were reduced to mean, standard deviation with the helps of techniques, mainly constructed for the purpose of it and also studied the effect of one thing on another. Obtained difference in groups was also studied and the usual test of significance was applied for reaching a dependable answer. With out the help of it, the investigator would have been helpless to draw some inference about the population.

The investigator was interested in the amount of correlation between a dependent variable and two or more other simultaneously. To see the forest as well as the trees, she was dealing with a multiple correlation problem by Doolittle method. That method provided the investigator with a solution of solving her types of multiple correlation problem with a minimum of statistical labour. The method enables selection analytically and added then one variable at a time untill a maximum multiple correlation was obtained. The coefficient of multiple correlation indicated the strength of relationship between one variable and two or more other taken together.

The multiple correlation was not merely the sum of the correlations of the dependent variable and the various independent variables taken seperately. It was related to the intercorrelations between independent variables as well as to their correlation with the dependent variable.

The interpretation in terms of R^2 was called the coefficient of multiple determination. This told the researcher the proportion of variance in X_1 that is dependent upon, associated with, or predicted by X_3 and X_4 combined with the regression weights.

For the calculation of the multiple correlation coefficient the investigator multiply each correlation of a predictor with the criterian by its corresponding regression coefficient, sum these products and take the square root.

While multiple correlation problems were extended to any number of variables, it was desirable to examine some of the general principles that apply for any number of variables. It has been seen that a multiple correlation increased as the size of correlation between dependent and independent variables increased and a multiple correlation increased as the size of inter-correlations of independent variables decreased. A maximum 'R' was obtained when the intercorrelation between different variables of opportunity costs were large and when intercorrelations of X_4 were dropped out. A minimum 'R' was obtained when intercorrelations of X_2 were dropped out. It was also noted that there were limitations to the application of the objectives. The whole story is not told by the two principles as observed in the said before.

REFERENCES

Edwards, A.L. : Experimental Designs in Psychological Research, New York: Nenary Holt and Co.,1960.

Ferguson, G.A. : Statistical Analysis in Psychology and Education, 3rd Edition, Mc.Graw Hill, Kogakusha Ltd., Tokyo, Japan.

Fisher, R.A. : Statistical methods for Research workers, New York, Harner Publishing Co., 1950.

Garrett, H.E. : Statistics in Psychology and Education, New York, David McKay Co., 1969.

Guilford, J.P. : Fundamental statistics in Psychology and Education, New York, Mc.Graw Hill Book Co., 1965.

Lindquist, E.F. : Elementary statistical Methods, In Psychology and Education,Boston : U.S.A. Houghton Mifflin Co., 1960.

Mc Nemar, Q. : Psychological statistics, New York, John Wiley & Sons, 1962.

Ostle, Bernard : Statistics in Research Oxford & 1BH Publishing Co., Calcutta, 1966.

Snedecor, G.W. : Statistical Methods, Ames Iowa, State College Press, 1956.

Walker, H.M. and Lev. J. : Statistical Inference, New York, Henery Holt & Co., 1953.

CHAPTER - V

CONCLUSIONS AND GENERALIZATIONS

(a) Introductory

(b) Findings

(c) Suggestions

(d) Further Research

REFERENCES

CHAPTER - V

CONCLUSIONS AND GENERALIZATIONS

(a) Introductory

India is a developing country. Some times India is called an underdeveloped country because most of their people are underdeveloped, having had no opportunity of expending their potential capacities in the services of society. The economic aspect of education comes in when we measure the effect of education in increasing man's productivity or his ability to contribute to production. Education is related to development, as a result of the training given in educational institutions, the people acquire productive capacity, be in a position to add to the sum total of production, and in fact produce much more than they would have done in the absence of the education. But the development of human resources through education is the more crucial. It is an end in itself and with out it even the adeqaute development of physical resources is not possible. The destiny of India is now being shaped in her class room. So that education cannot be consider in isolation or planned in a vaccum. It has to be used as a powerful instrument of social economic and political change and will, therefore, have to be related to the long term national aspirations, the programme of national development on which the country is engaged and the difficult short term problems it is called upon to face. Education and productivity can thus constitute a'rising spiral'whose different

parts sustain and support one another. A programme to reorganize the whole educational system is of highest importance now a day. By doing so we can easily achieve the new dimension in the shortest possible time.

(b) Findings

The present investigator was only in the position to analyse the opportunity cost measuresand the monetary benefit measures of teacher education. It was a normative survey. With the bird's eye view she distinguised relationship between cost and benefits as well as their component variables.

The primary data of opportunity cost showed that such cost is a big component of the total cost of teacher education, which is the earning forego by the student while they attending teacher education in place of the job. The efficiency of system of education rests on the quality of a teacher. If the teacher determines the equality of education, he is also the keystone to the future prosperity of a society. It is the quality of the individual that determines the quality of a society and the individual is largely the product of the training he receives. Institutions for the training of teachers is responsible for making out the teacher trainee as a better teacher. So that they should be able to show the light of knowledge to millions of children who, in the near future, will guide the destiny of our nation.

Primary data of monetary benefits of teacher education also showed that the trained teachers i.e. the teacher trainees had a substaintially greater life time earning then their counterparts. It is also based upon logical consideration that it is only investment in professional education that has paid dividends in terms of contribution to the increase in ones output. The expected fact that a trained teacher earns higher than an untrained one, makes the student finance privately on the training of their words, inspite of the fact that, this results in an increase in the cost of education. Obviously such a step is taken in the hope of a sumputuous yield in terms of monetary returns.

One of the main purpose of the study was to see the relationship between earning forego variables with their rate of return approach. By statistical analysis it is observed by the investigator that a very high positive correlation coefficient exists between opportunity cost as well as in monetary benefit. It means to say than if the opportunity cost increases, it effect the life long earning (monetary benefit) in a positive direction. Efficiency in teacher education is achieved when high price factors are substituted by low price factor of production. Money value of products increases with an inclusion of additional factor of production, because it has been evidenced that higher earnings are achieved by increasing the opportunity costs.

Opportunity Cost depends upon several factors。 Doo-little solution method enable the investigator to study the amount of correlation between opportunity cost and its factor namely EMU, EMR, EFU, EFR, SMU, SMR, SFU, SFR。 The best solution of regression equations is by means of this method and the Beta values were obtained for all the independent variable by applying it。

The difference between life time earning of trained or untrained teachers was taken as a measure of return on investment made in teacher education as additional education。 This rate of return when calculated and compared with other observations stood meaning-ful and significant。 Comparing them the investigator comes to the generalization that from the cost point of view the student are rational in undertaking investment in additional education i.e。 teacher's training。

(c) Suggestions

In teacher education planning, the application of cost benefit analysis method can be the basis of a rational approach to investment in teacher education。 Investments have prove their importance in terms of increasing earning and productivity。 As revealed by the data, it also produce that a high percentage level of monetary benefit can be achieved by increasing the opportunity cost of teacher education。 Quality improvement of teacher education also can eventually raise the monetary value of teacher education。 The observations signify

that there is enough score for improving the money value implied in teacher education. To attract the young man and woman towards teacher education, recognization is needed at all levels and in all courses.

(d) Further Research

The limitation of the present investigation as some what remarked to in the preceding para make a good pointer for initiating further research in the field. The present investigation is limited to Meerut region so that to enlarge the dimensions of the universe and stratifying the respondents in to more attributes and variables would enable one to perceive a more comprehensive view. Sophistication in the technology of research would help sharpen the focus. This obviously calls for obtaining a national picture for making comparisons with international figures on the topic. Further research is also called for an indirect monetary, direct non monetary and in direct non monetary benefits.

It is very much hoped that some agency may like to sponsor such research and some national agency may come forward with a substantial grant in aid to finance such a project. The extent of association among teacher education earning and occupation also calls for a research study.

REFERENCES

Baker, R.P. : The Preparation of Report, New York, Ronald Press Co., 1938.

Education and National Development, Teacher Education, N.C.E.R.T. 1978.

Ghosh, A. : Indian Economy, its nature and problems. The world Press Pvt. Ltd., Calcutta, 1979-80.

Grizzell, E.D. : Educational Studies and their use, Washington American Council on Education, 1940.

Galbraith, J.K. : Economic Development in Perspective Cambridge Mass : Havard Univ. Press, 1962.

Kabir Humayun : Education in New India, George Allen & Unwin Ltd. Ruskin House Museum Street, London, 1956.

Monroe, W.S. : Encyclopedia of Educational Research, New York, Mac Millan Co., 1941.

Pandit, H.N. : Measurement of Cost Productivity and Efficiency in Education, New Delhi, N.C.E.R.T., 1969.

Shrimali, K.L. : Education in Changing India, Asia Publishing House, London, 1965.

Turabion, K.L. : A manual for writing dissertations, Chicago, Univ. of Chicago Book Store, 1937.

APPENDICES

Appendix I – Elementary Male Urban

Appendix II – Elementary Male Rural

Appendix III – Elementary Female Rural

Appendix IV – Elementary Female Rural

Appendix V – Secondary Male Urban

Appendix VI – Secondary Male Rural

Appendix VII – Secondary Female Urban

Appendix VIII – Secondary Female Rural

Appendix I - Scores, Squares and Multiples for Elementary Male Urban Sample.

S.No.	OC	MB	OC^2	MB^2	OC X MB
1.	272	3067	73984	9406489	834224
2.	362	3265	131044	10660225	1181930
3.	316	3412	99856	11641744	1078192
4.	130	3321	16900	11029041	431730
5.	200	3165	40000	10017225	633000
6.	114	3289	12996	10817521	374946
7.	150	3167	22500	10029889	475050
8.	299	3133	89401	9815689	936767
9.	316	3247	99856	10543009	1026052
10.	330	3374	108900	11383876	1113420
11.	362	3454	131044	11930116	1250348
12.	153	3211	23409	10310521	491283
13.	117	3219	13689	10361961	376623
14.	116	3199	13456	10233601	371084
15.	175	3147	30625	9903609	550725
16.	207	3413	42849	11648569	706491
17.	125	3151	15625	9928801	393875
18.	277	3263	76729	10647169	903851
19.	362	3329	131044	11082241	1205098
20.	316	3074	99856	9449476	971384
21.	130	3222	16900	10381284	418860
22.	200	3129	40000	9790641	625800
23.	110	3257	12100	10608049	358270
24.	150	3261	22500	10634121	489150
25.	299	3361	89401	11296321	1004939

Appendix I (Contd.)

26.	217	3263	47089	10647169	708071
27.	230	3219	52900	10361961	740370
28.	362	3394	131044	11519236	1228628
29.	153	3329	23409	11082241	509337
30.	114	3074	12996	9449476	350436
31.	113	3321	12769	11029041	375273
32.	175	3289	30625	10817521	575575
33.	287	3147	82369	9903609	903189
34.	125	3413	15625	11648569	426625
35.	277	3222	76729	10381284	892494
36.	271	3129	73441	9790641	847959
37.	208	3261	43264	10634121	678288
38.	158	3361	24964	11296321	531038
39.	165	3257	27225	10608049	537405
40.	126	3265	15876	10660225	411390
41.	197	3167	38809	10029889	623899
42.	220	3454	48400	11930116	759880
43.	185	3113	34225	9690769	575905
44.	133	3165	17689	10017225	420945
45.	249	3067	62001	9406489	763683
46.	204	3412	41616	11641744	696048
47.	221	3247	48841	10543009	717587
48.	279	3211	77841	10310521	895869
49.	216	3199	46656	10233601	690984
50.	214	3171	45796	10055241	678594

Appendix II- Scores, Squares and Multiples for Elementary Male Rural Sample.

S.No.	OC	MB	OC^2	MB^2	OC X MB
1.	175	2317	30625	5368489	405475
2.	332	2591	110224	6773281	860212
3.	217	2442	47089	5963364	529914
4.	184	2307	33856	5322249	424488
5.	166	2410	27556	5808100	400060
6.	130	2481	16900	6155361	322530
7.	200	2553	40000	6517809	510600
8.	113	2396	12769	5740816	270748
9.	150	2374	22500	5635876	356100
10.	153	2269	23409	5148361	347157
11.	117	2463	13689	6066369	288171
12.	116	2351	13456	5527201	272716
13.	175	2452	30625	6012304	429100
14.	162	2377	26244	5650129	385074
15.	130	2432	16900	5914624	316160
16.	200	2369	40000	5612161	473800
17.	110	2407	12100	5793649	264770
18.	150	2434	22500	5924356	365100
19.	199	2366	39601	5597956	470834
20.	130	2499	16900	6245001	324870
21.	115	2339	13225	5470921	268985
22.	175	2471	30625	6105841	432425
23.	114	2385	12996	5688225	271890
24.	225	2390	50625	5712100	537750
25.	221	2490	48841	6200100	550290

Appendix II- (Contd.)

26.	190	2511	36100	6305121	477090
27.	195	2361	38025	5574321	460395
28.	190	2288	36100	5234944	434720
29.	190	2462	36100	6061444	467780
30.	200	2453	40000	6017209	490600
31.	150	2417	22500	5841889	362550
32.	75	2477	5625	6135529	185775
33.	173	2354	29929	5541316	407242
34.	140	2392	19600	5721664	334880
35.	135	2435	18225	5929225	328725
36.	205	2278	42025	5189284	466990
37.	165	2356	27225	5550736	388740
38.	260	2530	67600	6400900	657800
39.	250	2420	62500	5856400	605000
40.	200	2491	40000	6205081	498200
41.	150	2473	22500	6115729	370950
42.	175	2356	30625	5550736	412300
43.	205	2264	42025	5125696	464120
44.	190	2523	36100	6365529	479370
45.	175	2469	30625	6095961	432075
46.	150	2374	22500	5635876	356100
47.	125	2366	15625	5597956	295750
48.	80	2554	6400	6522916	204320
49.	75	2430	5625	5904900	182250
50.	90	2461	8100	6056521	221490

Appendix III- Scores, Squares and Multiples for Elementary Female Urban Sample

S.No.	OC	MB	OC^2	MB^2	OC X MB
1.	247	4136	61009	17106496	1021592
2.	256	4021	65536	16168441	1029376
3.	251	4074	63001	16597476	1022574
4.	249	4064	62001	16516096	1011936
5.	203	3975	41209	15800625	806925
6.	280	4111	78400	16900321	1151080
7.	237	4097	56169	16785409	970989
8.	256	3955	65536	15642025	1012480
9.	262	4061	68644	16491721	1063982
10.	210	4046	44100	16370116	849660
11.	177	3968	31329	15745024	702336
12.	164	4002	26896	16016004	656328
13.	156	3980	24336	15840400	620880
14.	130	4151	16900	17230801	539630
15.	173	4169	29929	17380561	721237
16.	162	4060	26244	16483600	657720
17.	208	4012	43264	16096144	834496
18.	242	3897	58564	15186609	943074
19.	177	4083	31329	16670889	722691
20.	162	4218	26244	17791524	683316
21.	237	4117	56169	16949689	975729
22.	335	4012	112225	16096144	1344020
23.	100	3996	10000	15968016	399600
24.	130	4055	16900	16443025	527150
25.	165	4021	27225	16168441	663465

Appendix III- (Contd.)

26.	205	4017	42025	16136289	823485
27.	265	4216	70225	17774656	1117240
28.	165	3869	27225	14969161	638385
29.	133	4119	17689	16966161	547827
30.	155	4049	24025	16394401	627595
31.	193	4054	37249	16434916	782422
32.	205	4161	42025	17313921	853005
33.	253	3941	64009	15531481	997073
34.	261	3899	68121	15202201	1017639
35.	165	4251	27225	18071001	701415
36.	173	4012	29929	16096144	694076
37.	251	4007	63001	16056049	1005757
38.	378	4065	142884	16524225	1536570
39.	150	4087	22500	16703569	613050
40.	275	4099	75625	16801801	1127225
41.	275	4056	75625	16451136	1115400
42.	225	3997	50625	15976009	899325
43.	150	4129	22500	17048641	619350
44.	125	4078	15625	16630084	509750
45.	275	4010	75625	16080100	1102750
46.	178	4028	31684	16224784	716984
47.	273	4128	74529	17040384	1126944
48.	293	4065	85849	16524225	1191045
49.	233	4133	54289	17081689	962989
50.	260	3025	67600	9150625	786500

Appendix IV - Scores, Squares and Multiples for Elementary Female Rural Sample.

S.No.	OC	MB	OC^2	MB^2	OC X MB
1.	255	3728	65025	13897984	950640
2.	289	3841	83521	14753281	1110049
3.	288	3911	82944	15295921	1126368
4.	217	3792	47089	14379264	822864
5.	200	3293	40000	10843849	658600
6.	225	3855	50625	14861025	867375
7.	190	3614	36100	13060996	686660
8.	100	3772	10000	14227984	377200
9.	125	3814	15625	14546596	476750
10.	225	3510	50625	12320100	789750
11.	200	3588	40000	12873744	717600
12.	190	3691	36100	13623481	701290
13.	190	3644	36100	13278736	692360
14.	162	3781	26244	14295961	612522
15.	190	3861	36100	14907321	733590
16.	176	3646	30976	13293316	641696
17.	108	3741	11664	13995081	404028
18.	250	3811	62500	14523721	952750
19.	200	3594	40000	12916836	718800
20.	150	3772	22500	14227984	565800
21.	200	3699	40000	13682601	739800
22.	150	3821	22500	14600041	573150
23.	155	3673	24025	13490929	569315
24.	208	3546	43264	12574116	737568
25.	150	3826	22500	14638276	573900

Appendix IV - (Contd.)

26.	200	3694	40000	13645636	738800
27.	183	3638	33489	13235044	665754
28.	233	3751	54289	14070001	873983
29.	275	3821	75625	14600041	1050775
30.	255	3822	65025	14607684	974610
31.	130	3363	16900	11309769	437190
32.	114	3745	12996	14025025	426930
33.	125	3525	15625	12425625	440625
34.	122	3972	14884	15776784	484584
35.	117	3914	13689	15319396	457938
36.	125	3510	15625	12320100	438750
37.	125	3498	15625	12236004	437250
38.	116	3791	13456	14371681	439756
39.	175	3554	30625	12630916	621950
40.	124	3881	15376	15062161	481244
41.	117	3861	13689	14907321	451737
42.	121	3756	14641	14107536	454476
43.	62	3842	3844	14760964	238204
44.	69	3721	4761	13845841	256749
45.	215	3694	46225	13645636	794210
46.	147	3672	21609	13483584	539784
47.	156	3799	24336	14432401	592644
48.	151	3573	22801	12766329	539523
49.	149	3646	22201	13293316	543254
50.	103	4033	10609	16265089	415399

Appendix V - Scores, Squares and Multiples for Secondary Male Urban Sample.

S.No.	OC	MB	OC^2	MB^2	OC X MB
1.	890	6235	792100	38875225	5549150
2.	967	6312	935089	39841344	6103704
3.	720	6138	518400	37675044	4419360
4.	521	6123	271441	37491129	3190083
5.	672	6107	451584	37295449	4103904
6.	962	6145	925444	37761025	5911490
7.	645	6138	416025	37675044	3959010
8.	863	6219	744769	38675961	5366997
9.	200	6152	40000	37847104	1230400
10.	260	6261	67600	39200121	1627860
11.	105	6172	11025	38093584	648060
12.	150	6164	22500	37994896	924600
13.	240	6211	57600	38576521	1490640
14.	500	6131	250000	37589161	3065500
15.	350	6238	122500	38912644	2183300
16.	300	6118	90000	37429924	1835400
17.	553	6121	305809	37466641	3384913
18.	200	6136	40000	37650496	1227200
19.	160	5972	25600	35664784	955520
20.	602	6568	362404	43138624	3953936
21.	250	6102	62500	37234404	1525500
22.	140	5882	19600	34597924	823480
23.	250	6213	62500	38601369	1553250
24.	296	6154	87616	37871716	1821584
25.	250	6564	62500	43086096	1641000

Appendix V - (Contd.)

26.	748	6234	559504	38862756	4663032
27.	150	6186	22500	38266596	927900
28.	151	6213	22801	38601369	938163
29.	813	5992	660969	35904064	4871496
30.	250	6290	62500	39564100	1572500
31.	383	6243	146689	38975049	2391069
32.	707	6184	499849	38241856	4372088
33.	300	6136	90000	37650496	1840800
34.	225	6212	50625	38588944	1397700
35.	200	6140	40000	37699600	1228000
36.	200	6232	40000	38837824	1246400
37.	200	5984	40000	35808256	1196800
38.	176	6254	30976	39112516	1100704
39.	150	6171	22500	38081241	925650
40.	205	6264	42025	39237696	1284120
41.	160	6113	25600	37368769	978080
42.	210	5895	44100	34751025	1237950
43.	300	6264	90000	39237696	1879200
44.	300	6142	90000	37724164	1842600
45.	150	6501	22500	42263001	975150
46.	300	6281	90000	39450961	1884300
47.	280	6179	78400	38180041	1730120
48.	300	6234	90000	38862756	1870200
49.	300	6133	90000	37613689	1839900
50.	475	6087	225625	37051569	2891325

Appendix VI - Scores, Squares and Multiples for Secondary Male Rural Sample

S.No.	OC	MB	OC^2	MB^2	OC X MB
1.	771	6193	594441	38353249	4774803
2.	400	6242	160000	38962564	2496800
3.	800	6182	640000	38217124	4945600
4.	697	6241	485809	38950081	4349977
5.	730	6342	532900	40220964	4629660
6.	572	6284	327184	39488656	3594448
7.	705	6213	497025	38601369	4380165
8.	946	6245	894916	39000025	5907770
9.	584	6234	341056	38862756	3640656
10.	650	6224	422500	38738176	4045600
11.	443	6193	196249	38353249	2743499
12.	1046	6265	1094116	39250225	6553190
13.	495	6194	245025	38365636	3066030
14.	621	6310	385641	39816100	3918510
15.	515	6238	265225	38912644	3212570
16.	485	6243	235225	38975049	3027855
17.	380	6134	144400	37625956	2330920
18.	900	6237	810000	38900169	5613300
19.	550	6308	302500	39790864	3469400
20.	289	6228	83521	38787984	1799892
21.	325	6169	105625	38056561	2004925
22.	385	6334	148225	40119556	2438590
23.	732	6325	535824	40005625	4629900
24.	615	6248	378225	39037504	3842520
25.	440	6223	193600	38725729	2738120

Appendix VI - (Contd.)

26.	597	6337	356409	40157569	3783189
27.	370	6127	136900	37540129	2266990
28.	380	6134	144400	37625956	2330920
29.	752	6317	565504	39904489	4750384
30.	750	6241	562500	38950081	4680750
31.	750	6179	562500	38180041	4634250
32.	750	6235	562500	38875225	4676250
33.	430	6324	184900	39992976	2719320
34.	800	6241	640000	38950081	4992800
35.	615	6221	378225	38700841	3825915
36.	850	6343	722500	40233649	5391550
37.	726	6286	527076	39513796	4563636
38.	1000	6172	1000000	38093584	6172000
39.	650	6234	422500	38862756	4052100
40.	935	6165	874225	38007225	5764275
41.	635	6281	403225	39450961	3988435
42.	800	6196	640000	38390416	4956800
43.	750	6310	562500	39816100	4732500
44.	750	6252	562500	39087504	4689000
45.	750	6161	562500	37957921	4620750
46.	750	6236	562500	38887696	4677000
47.	492	6274	242064	39363076	3086808
48.	720	6289	518400	39551521	4528080
49.	475	6243	225625	38975049	2965425
50.	705	6250	497025	39062500	4406250

Appendix VII - Scores, Squares and Multiples for Secondary Female Urban Sample.

S.No.	OC	MB	OC^2	MB^2	OC X MB
1.	110	6321	12100	39955041	695310
2.	150	6403	22500	40998409	960450
3.	200	6354	40000	40373316	1270800
4.	210	6349	44100	40309801	1333290
5.	200	6558	40000	43007364	1311600
6.	125	6296	15625	39639616	787000
7.	146	6357	21316	40411449	928122
8.	500	6348	250000	40297104	3174000
9.	216	6401	46656	40972801	1382616
10.	300	6583	90000	43335889	1974900
11.	216	6382	46656	40729924	1378512
12.	468	6312	219024	39841344	2954016
13.	500	6347	250000	40284409	3173500
14.	574	6398	329476	40934404	3672452
15.	320	6546	102400	42850116	2094720
16.	250	6293	62500	39601849	1573250
17.	150	6344	22500	40246336	951600
18.	650	6381	422500	40717161	4147650
19.	525	6370	275625	40576900	3344250
20.	800	6588	640000	43401744	5270400
21.	750	6296	562500	39639616	4722000
22.	210	6383	44100	40742689	1340430
23.	150	6421	22500	41229241	963150
24.	150	6357	22500	40411449	953550
25.	216	6528	46656	42614784	1410048

Appendix VII - (Contd.)

26.	200	6438	40000	41447844	1287600
27.	160	6412	25600	41113744	1025920
28.	200	6347	40000	40284409	1269400
29.	250	6467	62500	41822089	1616750
30.	250	6453	62500	41641209	1613250
31.	250	6432	62500	41370624	1608000
32.	200	6361	40000	40462321	1272200
33.	250	6342	62500	40220964	1585500
34.	150	6453	22500	41641209	967950
35.	140	6409	19600	41075281	897260
36.	240	6397	57600	40921609	1535280
37.	140	6420	19600	41216400	898800
38.	150	6302	22500	39715204	945300
39.	150	6457	22500	41692849	968550
40.	650	6399	422500	40947201	4159350
41.	250	6464	62500	41783296	1616000
42.	393	6352	154449	40347904	2496336
43.	250	6328	62500	40043584	1582000
44.	700	6532	490000	42667024	4572400
45.	700	6271	490000	39325441	4389700
46.	275	6384	75625	40755456	1755600
47.	125	6413	15625	41126569	801625
48.	600	6426	360000	41293476	3855600
49.	200	6368	40000	40551424	1273600
50.	250	6432	62500	41370624	1608000

Appendix VIII - Scores, Squares and Multiples for Secondary Female Rural Sample.

S.No.	OC	MB	OC^2	MB^2	OC X MB
1.	595	6214	354025	38613796	3697330
2.	565	6198	319225	38415204	3501870
3.	550	6204	302500	38489616	3412200
4.	625	6184	390625	38241856	3865000
5.	767	6235	588289	38875225	4782245
6.	675	6126	455625	37527876	4135050
7.	700	6184	490000	38241856	4328800
8.	645	6301	416025	39702601	4064145
9.	600	6212	360000	38588944	3727200
10.	397	6212	157609	38588944	2466164
11.	500	6209	250000	38551681	3104500
12.	800	6322	640000	39967684	5057600
13.	536	6164	287296	37994896	3303904
14.	767	6134	588289	37625956	4704778
15.	680	6206	462400	38514436	4220080
16.	800	6253	640000	39100009	5002400
17.	600	6154	360000	37871716	3692400
18.	700	6213	490000	38601369	4349100
19.	210	6193	44100	38353249	1300530
20.	130	6223	16900	38725729	808990
21.	1200	6344	1440000	40246336	7612800
22.	500	6213	250000	38601369	3106500
23.	575	6113	330625	37368769	3514975
24.	444	6201	197136	38452401	2753244
25.	150	6164	22500	37994896	924600

Appendix VIII - (Contd.)

26.	280	6232	78400	38837824	1744960
27.	682	6184	465124	38241856	4217488
28.	280	6218	78400	38663524	1741040
29.	280	6103	78400	37246609	1708840
30.	400	6298	160000	39664804	2519200
31.	370	6276	136900	39388176	2322120
32.	700	6253	490000	39100009	4377100
33.	600	6120	360000	37454400	3672000
34.	260	6144	67600	37748736	1597440
35.	585	6272	342225	39337984	3669120
36.	900	6261	810000	39200121	5634900
37.	641	6164	410881	37994896	3951124
38.	495	6312	245025	39841344	3124440
39.	700	6168	490000	38044224	4317600
40.	372	6180	138384	38192400	2298960
41.	240	6184	57600	38241856	484160
42.	491	6240	241081	38937600	3063840
43.	440	6206	193600	38514436	2730640
44.	872	6171	760384	38081241	5381112
45.	440	6258	193600	39162564	2753520
46.	659	6183	434281	38229489	4074597
47.	451	6323	203401	39980329	2851673
48.	634	6179	401956	38180041	3917486
49.	775	6129	600625	37564641	4749975
50.	761	6207	579121	38526849	4723527

BIBLIOGRAPHY

Agrawal, A.N. : Economic Planning, New Delhi, Vikas Publishing House, 1976.

Almack, J.C. : Research and Thesis Writing, Bostin, Hougton Mifflin Co., 1930.

Abelson, H.H. : The Art of Education Research, New York, World Book Co., 1933.

Barr, Davis Johnson : Educational Research and Appraisal. J.B.Lippicott Co.,Chicago, New York, 1953.

Bridgman, D. S. : Problem of Estimating the Monetary Value of College Education, in Higher Education in the United States : The Economic Problem, Ed. Harris, 1960.

Becker, Gary : Under investment in College Education? American Economic Review, May 1960.

Becker, G.S. : Human Capital. A Theoretical and Empirical Analysis, with Special Reference to Education Columbia University Press, 1964.

Best, John W. : Research in Education, Third Ed. Prentice Hall of India P. Ltd. 1977.

Blaug, M. : Economics of Education, Volume I, Middle Sex Penguin Books Ltd., 1968.

Blaug, M. : Economics of Education II, Middle Sex, Penguin Books Ltd., 1968.

Blaug, Mark : A Selected Annotated Bibliography in the Economics of Education, University of London, Institute of Education 1964, Sub-sequently revised as Economics of Education : A selected Annoted Bibliography Pergamon Press, 1966. The New Version listed nearly 800 Items.

Bowman, M.J. : Costing of human Resource Development and comment on that paper in the proceeding of the 1963 conference of the International Economic Association, on the economics of Education London, Mac Millan 1966.

Bowen, W. G. : Assessing the Economic Contribution of Education : an appraisal of alternative approaches in higher education, Report of the Committee under the Chairmanship of Lord Robbins 1961-63 London H.M.S.O. 1963, Appendix IV.

Borg, W.R. : Educational Research, the Scientific Method in Education, New York, 1963.

Buch, M.B. : Second Survey of Research in Education, Baroda, Society for Educational Research and Development, 1979.

Baker, R.P. : The Preparation of Report, New York, Ronald Press Co., 1938.

Cash, W. C. : A critique of Man Power Planning in Africa, Economic Development and Cultural Change, Vol. 140965, No.1.

Denison, E.F. : The Sources of Economic Growth in the United States and the alternatives before us, a Study by the Committee for Economic Development, New York.

Education Commission : Education and National Development Report, 1966, N.C.E.R.T., New Delhi.

Educational and National Development, Teacher Education, N.C.E.R.T., 1978.

Education, National Planning Committee : Vohra & Co., Publishers Ltd., Bombay, 1948.

Edwards, A.L. : Experimental Designs in Psychological Research, New York: Nenary Holt and Co. 1960.

Ferguson, G.A. : Statistical Analysis in Psychology and Education, 3rd Edition, Mc.Graw Hill, Kogakusha Ltd., Tokyo, Japan.

Fisher, Irving : The Nature of Capital and Income, New York, 1906.

Fisher, R.A. : Statistical Methods for Research Workers, New York, Harner Publishing Co., 1950.

Garrett, H.E. : Statistics in Psychology and Education, New York, David Mc.Kay Co., 1969.

Galbraith, J.K.: Economic Development in Perspective Cambirdge Mass : Havard Univ. Press, 1962.

Ghosh, A. : Indian Economy, its nature and problems. The World Press Pvt. Ltd., Calcutta, 1979-80.

Gounden, Nalla : Education and Economic Development - A Study in Human Capital Formation and its Role in Economic Development in Indias 1950-51 to 1960-61, Ph.D. Edu., Kur. Univ. 1965.

Grizzell, E.D. : Educational Studies and their use, Washington American Council on Education, 1940.

Guilford, J.P. : Fundamental Statistics in Psychology and Education, New York, Mc.Graw Hill Book Co., 1955.

Hansen, W.Lee. : Total and Private Rates of Return to Investment in Schooling, Journal Political Economic Vol. I, 1963.

Harberger, Arnod : Investment in man Vs. Investment in Machines: The case of India. University of Chicago, 1963.

Houthakker, H.S. : Education and Income Review of Economics and Statics Vol. 41, 1959.

Kamat, A.R. : Two Studies in Education, Gokhale Institute of Politics and Economics, Poona.

Kabir Humayun : Education in New India, George Allen & Unwin Ltd. Ruskin House Museum Street, London, 1956.

Kothari, V.N.(Ed): Investment in Human Resources, Papers Read at Indian Economic Conference, 1966, Varanasi, Popular Prakashan.

Kothari and Punchamuki, P.R. : A Survey of Research in Economics of Education in India, I.C. S.R., New Delhi, 1975.

Lindquist, E.F.: Elementary statistical Methods. In Psychology and Education, Boston : U.S. A. Houghton Mifflin Co., 1960.

Lenin as quoted by I.A. Yevenko, in Planning in the U.S.S.R., Foreign Language Publishing House, Mascow, 1961,

Marshall, Alfred: Principles of Economics, Sixth Education, 1910, (First edition 1890).

Merrett, Stephen: Student Finance in Higher Education, July, 1965.

Mc Nemar, Q. : Psychological Statistics, New York, John Wiley & Sons, 1962.

Miller, H.P. : Annual and Lifetime income in relation to Education 1929-59 American Economic Review, Vol. 50, 1960.

Monroe, W.S. : Encyclopedia of Educational Research, New York, Mac Millan Co., 1941.

Naik, J.P. : Educational Planning in India, Allied Publishers, New Delhi, 1965.

Ostle, Bernard : Statistics in Research Oxford & 1BH Publishing Co., Calcutta, 1966.

Prakash Shri : Educational System of India, an Econometric Study Concept Publishing Company Delhi, 1977.

Phillips, H.M. : Education as a Basic Factor in Economic and social Development, in the Final Report of the Conference of African States on Development of Education in Africa, Addis Ababa-15-30 May, 1961.

Pandit, H.N. : Measurement of Cost Productivity and Efficiency in Education, New Delhi, N.C.E.R.T., 1969.

Panchamukhi, P. R.: Measurement of effects of Public Expenditure with Special Reference to Public Education and Health Expenditure in India, Ph.D.Eco. Bom. Univ. 1967.

Rao, V.K.R.V. : Education and Human Resource Development 1966, Allied.

Rao, V.K. R.V. : Indian National Income 1950-80, An Analysis of Economic Growth and change, Sage Publications, New Delhi/Baverly Hills/London, 1983.

Smith, Adam : The Wealth of Nations, Book II, 1776.

Schultz, T.W. : Capital Formation of Education, Journal of Political Economy, December, 1960.

Schultz, T.W. : The Economic Value of Education, Columbia University Press, New York, 1964.

Strumilin, S.G: The Economic Significance of the Peoples Education, Leningrad, 1924.

Shaffer, H.G. : Investment in Human Capital : Comment, American Economic Review Vol. 52, 1961.

Schultz, T.W. Investment in Human Capital, American Economic Review, March, 1961.

Schultz, T.W. : Education as a Source of Economic Growth Economics of Education Research Paper, 15 August, 1961 and Education and Economic Growth, Social Forces influencing American Education, (ed.) H.G. Richey, Chicago, 1961.

Shrimali, K.L. : Education in Changing India, Asia Publishing House, London, 1965.

Shan, K.R. & Srikanthan, S.: Education, Earning and Income Distribution, A Research Report Sponsored by the Indian Council of Social Science Research, New Delhi., Criterion Publications, June, 1981.

Saxena, Satieshwari: Educational Planning in India, A Study in Approach and Methodology, Sterling Publishers Pvt., Ltd., New Delhi. 1979.

Snedecor, G.W. : Statistical methods, Ames Iowa, State College Press, 1956.

Singh, B. : Education as Investment, Meenakshi Prakashan, 1967.

Travers, Robert M.W. : An Introduction to Educational Research, Second Edition, The Mac Millan Company, New York, Collier Mac Millan Limited, London, 1958 and 1964.

Timbergen, Jan. : Development Planning, Translated from the Dutch by N..D. Smith, World University Library Weidenfield and Nicolson Limited, 1967.

Timbergen, Jan : Quantitative Adoptation of Education to Accelerated Growth, 1962.

Turabion, K.L. : A Manual for Writing Dissertations, Chicago Univ. of Chicago Book Store, 1937.

Vaizey, J. : The Rates of Returns on Investment in Education, Economics of Education, London, Pelicon Orient Longmen's 1969.

Vaizey, J. : Economics of Education, London, Faber and Faber, 1962.

Visvesvaraya, Sir M. : Planned Economy of India, Bangalore Press, Bangalore, 1934.

Walsh, J.R. : Capital Concept Applied to Man, Quarterly Journal of Economics, February, 1935.

Walker, H.M. and Lev., J. : Statistical Inference, New York, Nenery Holf & Co., 1953.

Weisbrod, B.A. : The Valuation of Human Capital, Journal of Political Economy, October, 1961.

Young, R.C. : Educational Planning and Economic Criteria in India's context, Contained in Education as Investment, Edited by Baljit Singh, Meenakshi Prakashan, 1967.